

MIT remembers sacrifices made on September 11

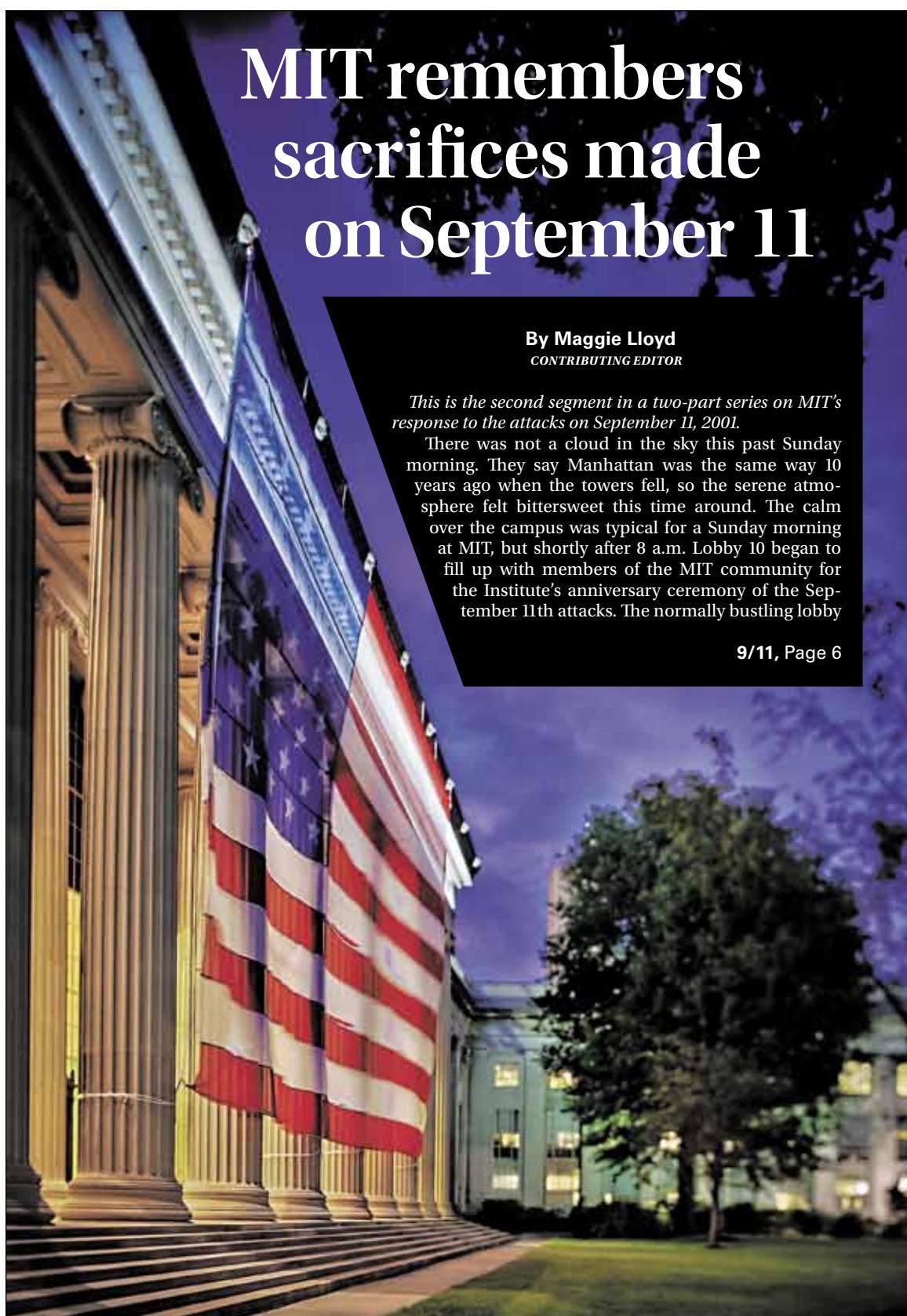
By Maggie Lloyd

CONTRIBUTING EDITOR

This is the second segment in a two-part series on MIT's response to the attacks on September 11, 2001.

There was not a cloud in the sky this past Sunday morning. They say Manhattan was the same way 10 years ago when the towers fell, so the serene atmosphere felt bittersweet this time around. The calm over the campus was typical for a Sunday morning at MIT, but shortly after 8 a.m. Lobby 10 began to fill up with members of the MIT community for the Institute's anniversary ceremony of the September 11th attacks. The normally bustling lobby

9/11, Page 6



On Sunday, members of the MIT community reflected on the 10th anniversary of 9/11. Hackers installed lights on the Green Building and hung a flag, shot here in high dynamic range, on the pillars of Building 10. The MIT Chapel's bells rang at 8:46 a.m. and 9:03 a.m., marking the times that planes struck the World Trade Center's twin towers in 2001.

UA elections begin tomorrow

Voting in the elections for the Undergraduate Association Senate and Class of 2015 Council will begin on

INSIDE, p. 11 Wednesday. Online voting will begin on Wednesday at 9 a.m. and run until

Thursday at midnight, while paper voting will occur between 9 a.m. and 5 p.m. on Friday in Lobby 10. There are currently five candidates for 2015 president, one for vice president, and one for public-

ity chair, but no candidates for social chair.

For Baker, Burton Conner, McCormick, New House, Next House, Simmons, fraternities, sororities, and independent living groups there are more open senate seats than there are candidates. The number of senators per constituency is set so that each senate member represents approximately 160 students. Currently, MacGregor is the only dorm with more candidates than senate seats.

The election landscape may still change. The late petition deadline to declare a candidacy is today at 5 p.m. Students who would like to become a

write-in candidate should email their dorm or FSILG announcing that they are running for a position, said UA President Allan E. Miramonti '13. An elected write-in candidate must sign a Statement of Candidacy and demonstrate that he or she is a registered undergraduate.

Miramonti '13 noted that candidate registration turnout was typical this year, and that students are normally "sluggish" when it comes to meeting the Monday 5 p.m. deadline.

The election results for the Senate and Class of 2015 Council will be released on Saturday.

—Jennie Zheng

coverage for the fall.

Need to go somewhere? ZipCar has a new deal that will let MIT students who are 18 years or older to rent cars located on campus. See <http://www.zipcar.com/mit> for more details.

The Stata Center was recently named in the top 10 major architectural failures by CNBC. For the full article, see <http://www.cnbc.com/id/44231749/>.

Send news information and tips to news@tech.mit.edu.

YOU HAVE GOOD IDEAS. SPEAK UP!

Undergrads should engage in discourse about the big issues.

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REMEMBER, REMEMBER ...

The Rule of November.

CAMPUS LIFE, p. 23

THEY'RE NO SUB FOR GLASSES

But carrots can still be pretty tasty!

CAMPUS LIFE, p. 23



MIT REMEMBERS

Students, faculty, and staff honored the memory of those lost on the tragic day 10 years ago.

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SEE YOURSELF WORKING ALONGSIDE THE BEST IN THE BUSINESS

TECHNOLOGY INFO SESSION

Thursday, September 15th

Room 32-144

6:00PM-7:00PM

Business Attire

Are you wondering how to apply your technical skill set in your career? Interested in building and managing systems that support the growth and development of businesses in financial services? We invite you to join us as we discuss full-time positions in Technology. It will be a great opportunity to speak with business professionals and alumni.

Exceed your expectations at barcap.com/seeyourself.

Resume Drop Deadline: Thursday, September 22nd



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McKinsey&Company



Join the most influential leadership network in the world

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McKinsey Operations Event

Friday, September 16

MIT Campus - RSVP to
Katelyn_Ohara@mckinsey.com
2:00 - 4:00 p.m.

Business Analyst Presentation

Monday, September 19

Stata Center - 32-123
7:30 - 9:00 p.m.
Food Provided

Coffee Chats

Tuesday, September 20
Toscanini's 899 Main Street
10:00 a.m. - 2:00 p.m.

Career Fair

Wednesday, September 21

Johnson Athletics Center - 2nd floor
11:00 a.m. - 5:00 p.m.

Application Deadline

Wednesday, September 21

www.mckinsey.com/usschools at
11:59 p.m.

Wall Street recovers as new worries shake Euro markets

By Christine Hauser
THE NEW YORK TIMES

Shares on Wall Street closed mostly higher Monday despite fears of a deepening debt crisis in Europe that battered European markets and financial institutions suspected of being vulnerable to a possible Greek default.

Markets have been subject to sharp swings in recent weeks, particularly as concerns over the sovereign debt crisis have grown. The latest slide in the currency and stock markets occurred Monday, set off by the resignation Friday of Juergen Stark, a top German official at the European Central Bank. His move highlighted policy discord in the bank.

It also aggravated concerns in the currency markets that Germany was preparing contingency plans for its banks in the event of a Greek default, Eric Viloria, senior market strategist for FOREX.com, said.

Greek bonds showed record high yield spreads Monday, while German bonds were at lows, Viloria noted.

"There are actually quite a bit of

factors that are weighing on the euro today," he said, adding that investors were avoiding assets they viewed as risky. "You are seeing some dollar strength, and that is highlighted by the yields."

Analysts attributed the market movements Monday to concerns from last week over Greece and fresh worries about the possibility of sovereign downgrades.

"This is not a problem resolved in an afternoon," said Peter Tuz, president and portfolio manager at Chase Investment Counsel. "And it looks like things are going to get worse before they get better."

Stocks on Wall Street veered from mixed to more than 1 percent lower, then made a late push to close higher.

The Standard & Poor's 500-stock index gained 8.04 points, or 0.70 percent, to close at 1,162.27. The Dow Jones industrial average added 68.99 points, or 0.63 percent, to close at 11,061.12, and the Nasdaq composite index rose 27.10 points, or 1.10 percent, to close at 2,495.09.

In Europe, the FTSE 100 in Britain dropped 1.6 percent and the

Euro STOXX 50 index of eurozone blue chips was off 3.8 percent. The DAX in Germany lost 2.3 percent, and the CAC 40 in France tumbled 4 percent despite fresh efforts by the French government and one of the hardest-hit banks, Societe Generale, to calm nerves.

Asian markets slumped. The Nikkei 225 index closed down 2.3 percent, and the Hang Seng in Hong Kong fell 4.2 percent.

The euro finished at \$1.36, after declining rapidly against the dollar to \$1.35 from \$1.41 just over a week ago.

Interest rates rose slightly. The Treasury's benchmark 10-year note fell 10/32, to 101 19/32, and the yield rose to 1.95 percent from 1.92 percent late Friday. Gold fell \$46.5 to \$1,809.90 an ounce.

In equity markets, the technology, financial and consumer discretionary sectors were all up more than 1 percent.

Bank of America and JPMorgan Chase were each up more than 1 percent, at \$7.05 and \$32.42, respectively. Wells Fargo rose more than 2 percent to \$24.10.

Broadcom to buy Netlogic Microsystems for \$3.7 billion

Broadcom agreed Monday to buy NetLogic Microsystems for \$3.7 billion in cash, in a bid to capitalize on the world's surging data needs.

The acquisition, Broadcom's largest to date, is part of a strategic push into semiconductor chips for advanced networking devices. With NetLogic, Broadcom gains a valuable portfolio of patents and a coveted collection of processors for routers, complementing the company's vast chip business for consumer devices like cellphones and set-top boxes.

"This greatly expands our market opportunities in the networking space," Broadcom's chief executive, Scott A. McGregor, said in an interview. "We'll be the only company that provides complete end-to-end solutions in networking."

As more consumers buy smartphones and spend increasing time on the Internet, companies like NetLogic that build the pipelines of the communications industry are becoming increasingly attractive takeover targets. Earlier this year, Qualcomm agreed to acquire Atheros, another networking equipment company, for \$3.1 billion.

—Evelyn M. Rusli and Michael J. De La Merced,
The New York Times

36 light-years away, new hope for an Earth-like planet

European astronomers said Monday that they had found what might be the best candidate for a Goldilocks planet yet: a lump of something about 3.6 times as massive as the Earth, circling its star at the right distance for liquid water to exist on its surface — and thus, perhaps, to host life, as we narrowly imagine it.

The planet, known as HD 85512b, is about 36 light-years from here, in the constellation Vela. It orbits its star at about a quarter of the distance that Earth circles the sun, taking 58 days to make a year. That distance would put it in the star's so-called habitable zone, if the planet is rocky and has some semblance of an atmosphere — "if everything goes right and you have clouds to shelter you," as Lisa Kaltenegger of the Harvard-Smithsonian Center for Astrophysics and the Max Planck Institute for Astronomy in Heidelberg, Germany, summarized it.

Astronomers cautioned, however, that it would take years and observations from telescopes not yet built before those assumptions could be tested and a search for signs of life could be undertaken.

—Dennis Overbye, The New York Times

Niger, Libya's neighbor, fears influx of Gadhafi loyalists

NIAMEY, Niger — Officials in this mostly desert nation bordering Libya are warily watching and bracing for what they call the disaster scenario that has not yet happened: a huge influx of defeated soldiers loyal to the fallen Libyan leader, Moammar Gadhafi.

So far, they have had to contend only with a thin trickle of loyalists making their way across hundreds of miles of desert to the bare-bones towns in northern Niger, including one of Gadhafi's sons, a handful of his generals and his security chief.

But officials here in one of the world's most impoverished nations emphasized that the diplomatic awkwardness of allowing the former government's dignitaries here was nothing compared with the influx they feared with somewhat more urgency each day the Libyan conflict was drawn out.

"If there is a negotiated solution, we won't get the worst case," said Massaoudou Hassoumi, the chief of staff to Niger's president, Mahamadou Issoufou. "Unfortunately, it looks like that won't happen. So, it looks like there will be armed men. If they don't hand over their weapons, we will disarm them."

"What's happened so far is very minimal," Hassoumi said.

—Adam Nossiter, The New York Times

WEATHER

Warm weather now, but cooling through the week

By Roman Kowch
STAFF METEOROLOGIST

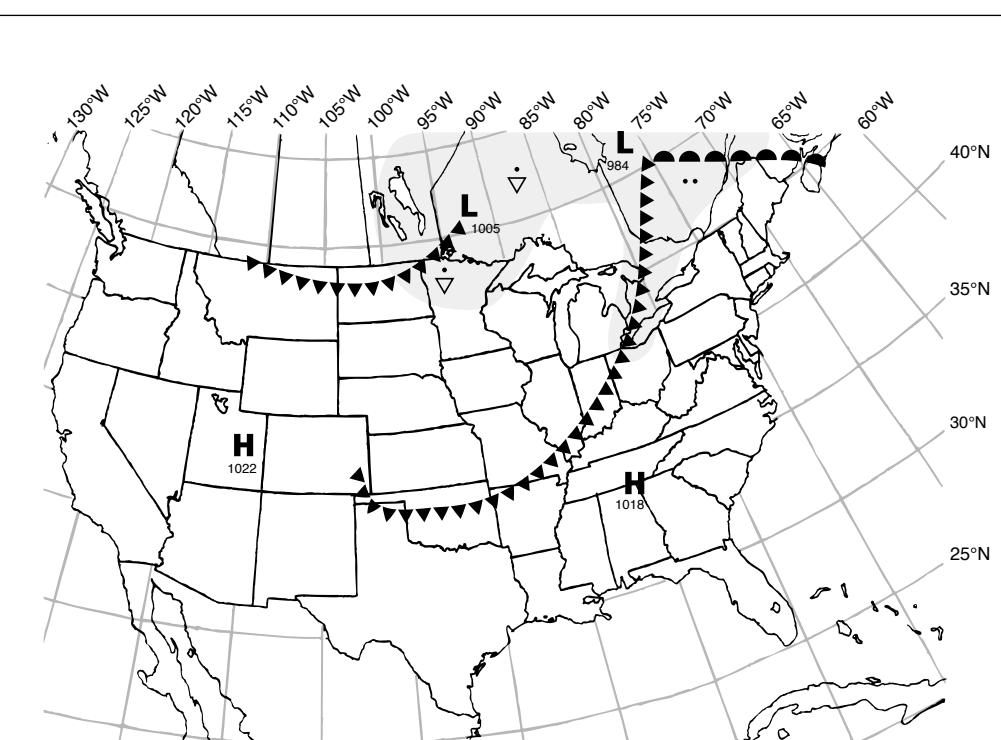
New England will not contend with any rain today, except for some afternoon clouds. A strong low pressure spinning in northern Quebec will funnel in warm, moist air from the southern U.S. This will raise temperatures well into the 80s°F for today and tomorrow. Then, a cold front should approach on Wednesday, providing an opportunity for some pop-up thunderstorms. A cooler air mass will follow the front's passage on

Thursday, as well as clear skies by the weekend.

Fortunately, the weather this past week allowed Hurricane Katia to steer away from New England. A similar story is setting up this week regarding Tropical Storm Maria. The cold front passing through on Thursday will help "bump" Maria further into the Atlantic. This will spare New England from any tropical systems in the near future. But do remember, the Atlantic hurricane season is still in full swing until the end of November.

Extended Forecast

Today: Mostly sunny and warm. High 85°F (29°C). SW wind at 10–15 mph.
Tonight: Slight chance of showers late, otherwise partly cloudy. Low 65°F (18°C). SW wind at 15–20 mph.
Tomorrow: Slight chance of thunderstorms, otherwise partly sunny. High 84°F (29°C). W wind at 10 mph.
Thursday: Partly sunny, chance of showers. Highs near 70°F (21°C). Lows near 60°F (16°C).
Friday: Sunny. Highs near 63°F (17°C). Lows near 45°F (7°C).



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GUEST COLUMN

Love trumps all

An alternative case for life

By Maita Esteban

After reading Igor Yanovich's Sept. 9 column on the abortion issue, I felt that it was time to add a woman's viewpoint to this debate. Quite honestly, I take offense when one characterizes the pro-life movement as an attempt to keep women "domestic, weak, and submissive to men." I'm not so naïve as to think that the anti-abortion movement is without flaws. However, I would like to offer a different pro-life perspective for your consideration. Once you read this, you can judge whether the pro-life case is really all about control over women.

We humans are social creatures, and we naturally seek to form relationships. We all share a basic desire to love and be loved.

"Are you pro-life?"

Until recently, I've hemmed and hawed about this question. My favorite answer used to be this: "Well ... I would never have an abortion myself ... but it should really be the woman's choice." It's wrong to kill babies, sure. When you're a young student at a Catholic grade school, you can accept that logic without question. As I got older, though, the lines became blurry. After all, I am a woman. It's not too difficult to picture myself in the shoes of a struggling expectant mother. If I were ever in that position, I would most certainly resent someone telling me what to do with my body.

Faced with this question now, though, I can respond with a firm "yes." What changed? Surprisingly, it wasn't the embryo argument, although this is one of the strongest cases for the pro-life movement. Life begins at conception; you cannot fabricate your own standards for personhood. Once you draw the line of life at some arbitrary number of days, you're on a slippery slope when it comes to defining the human being. As Yanovich pointed out, however, the debate over the fetus' vitality is a cover for a deeper, more controversial question — a question that arises before a child is even conceived. The underlying issue is this: what can (or can't) a woman do with her body?

Before I attempt to answer this question, consider another: what are we made for? The responses range from the ordinary to the existential. Without becoming too philosophical, however, here's one answer: we are made for relationships. Sure, relationships aren't like food and drink — one can certainly survive without human company. For most people, however, loneliness is a type of starvation. No story illustrates this better than that of Genie, a

feral child. Genie was a young girl whose parents kept her in complete isolation for 13 years. Even after she was removed from this environment of silence and abuse, Genie never developed the ability to communicate fully with others. Her case may be extreme, but it shows that we need people in order to develop as people. Indeed, the need for relationships is written in our bodies. We have organs that are designed to be compatible. Oxytocin and vasopressin run through our veins; these two hormones facilitate pair bonding. Studies have shown that happily married couples are less prone to pneumonia, cancer, and heart attacks. We humans are social creatures, and we naturally seek to form relationships with our families and friends. In essence, we all share a basic desire to love and be loved.

Given that desire, it's no wonder we are fascinated with sex. Pleasure, intimacy, love ... all of these may be part of The Reason We Have Sex. We look to sex as one way to add meaning to our relationships — which is a bit bizarre when you think about it. In purely biological terms, sex exists to diversify the gene pool. According to Darwin, it would be advantageous to mate with every person in sight — that's what most members of the animal kingdom do, right? And yet we don't. If I see a hot guy walking down the Infinite Corridor, I don't automatically grab him and make love to him in the nearest closet. No. We are not ruled by our hormones. It may seem impossible, but ultimately we are capable of saying no to sex. And that is what makes it special. In a way, it's fitting that sex is the act that begets life. Because sex is a choice, no other act can bring two people together more intimately. No other act requires more love and trust, because it is in the sexual embrace that we are most vulnerable.

If we truly recognize sex for the gift that it is, then we won't need a way eliminate 'problems.'

"It's just sex."

For me, no three words are more heartbreaking than these. Too often, sex becomes a mere act of recreation. A one-night stand may bring a moment of pleasure, but in the end, it cheapens the value of the sexual act. More importantly, though, it devalues the human being. Sex is an incredible way to express love. When you reduce sex to an act of pleasure, what happens? Put simply, you are using each other. Once that fleeting orgasm becomes the primary goal of sex, a person becomes a means to an end — a sex toy.

At this point, it seems like I've made a huge, hopeless digression. I'm supposed to be talking about abortion, after

all. The two subjects are intimately related, though. The pro-choice movement is based on the belief that a woman can do whatever she wants with her body. If that means having sex whenever she feels like it, then she should be free to do so. But I ask you: is that freedom? No woman should feel that she has to have sex in order to be loved. Unfortunately, sex is almost a necessary ingredient for a meaningful relationship nowadays. A celibate college student is viewed as an anomaly, or perhaps a social failure. But think about it. If a man who's attracted to me can check his baser passions, then I know that he loves me for the person I am, not for the pleasure I can bring him. If he truly loves you, he will wait. Ladies, you are worth it. Don't let anyone tell you otherwise.

All too often, a woman's fertility is treated as a disease. Along with STDs, unwanted children are a setback to having sex whenever we want.

That, more than anything, is what changed my mind. We can talk about abortion as murder — an action that violates a fetus' right to life. It's more than that, though. Abortion is a way out. All too often, a woman's fertility is treated as a disease. Along with STDs, unwanted children are a setback to having sex whenever we want. Abortion arose as one solution to this "problem." The original intent behind this procedure may have been good; it was meant to give women a sense of control over their bodies. However, the effects are far more insidious. Now that we have a way to correct our mistakes, it is so much easier to strip away the deeper meaning of sex. We have no qualms about treating it as an act of pleasure. And while the pleasure derived from sex isn't a bad thing, it shouldn't be the ultimate goal. So when someone paints the pro-life position as a way of "making women less than full people," I ask — what does it mean to be a "full person"? Some would say that it means I can have sex whenever I want. I claim that it means I can experience love in the best way possible. We long to love and be loved, and unfortunately, abortion allows us to corrupt that desire.

I suppose I envision a world where abortion will be completely unnecessary. After all, abortion is really a symptom of a more fundamental problem: our view of sex, our view of love, our view of each other. If we truly recognize sex for the gift that it is, then we won't need a way eliminate "problems." Until then, though, I am pro-life.

Maita Esteban is a member of the Class of 2013.

CORRECTIONS

Due to police error, the police log published on April 11, 2008 misstated the identity of Mikhail Shklyar of Beverly Mass., who was reported arrested for trespassing on March 18, 2008. The man who was actually arrested shared the same name, Mikhail Shklyar, but was from Brooklyn, New York at the time of the arrest.

OPINION POLICY

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Sparkling the conversation

A greater intellectual contribution from undergrads is needed

By Jacob London

As MIT students, we need to "engage in more public discourse." Last Tuesday, *The Tech's* call for undergraduates to move on from squabbling over student life complications was encouraging. The editorial invited a serious discussion of MIT's social and political importance. In the coming weeks, complaints about little things on campus will die down. But it remains to be seen whether undergraduates will stand up and begin to participate in the larger debates that will not only shape the Institute, but the world. Let me begin where *The Tech* left off.

As a freshman interested in political science and the STS major, I came to MIT eager to meet fellow students who were passionate about politics and policy-oriented discussion. Unfortunately, after consciously seeking out these discussions, I have found that many of the students I've met during my short time at MIT regard politics with a sense of disillusionment and apathy. Some students intentionally do not follow politics due to an overwhelming disapproval of our national political discourse. I can sympathize — sustained periods of political brinksmanship and partisan bickering can be extremely tedious, especially when

definitive actions are not taken. But what troubles me — and is alarmingly prevalent — is the intentional dismissal of politics justified by the notion that, as an MIT student, scientific research should completely dominate one's focus and efforts.

One of the beauties of MIT is that undergraduates can happily immerse themselves in scientific research for four years

Most MIT students have aspirations to make substantial and positive contributions to society through their work. In order to achieve these aspirations, students must learn to communicate the value of their work to the general public.

and leave the Institute with a degree and a rewarding job. But another beauty of MIT is that most of its students have aspirations to make substantial and positive contributions to society through their work. In order to achieve these aspirations, MIT students must realize that the value of their work should be communicated not only to institutions that support research through grants, but to the general public as well. Developing these critical communication and advocacy skills can and should begin in the undergraduate years.

This development does not need to be governed by the curriculum. Students taking CI-H and CI-HW courses will get a thorough introduction to the process of building effective communication skills. But another effective way to begin exercising these skills is to simply engage fellow undergraduates in serious discussions (or even late-night philosophical meditations,

forging bold pathways toward an energy future less dependent on oil, or are we being impeded by political forces that are unwilling to move away from oil dependency fast enough?

These debates are extremely important, and MIT is a remarkable place to have them. Here, chances are that even if one is talking to a student who is not particularly vocal, that student will have thoughtful insights into many of the questions we need to ask.

This is why I am optimistic. I'm certain that there are other students who will discover the importance of understanding why their own work in science and technology cannot and does not exist in a vacuum. Their work here, and after they leave MIT, will be hugely impacted by politics and economics. My hope is that more MIT students will contribute to an enhanced campus-wide dialogue that ultimately makes the Institute an even more complex, vibrant, and enriching environment. More importantly, they will begin to take responsibility for shaping the national conversations that might otherwise fail to value the importance of the research that they — we — will contribute.

Jacob London is a member of the Class of 2015.

The anti-stimulus argument

Why Keynesians should think again

By Keith Yost
STAFF COLUMNIST

In 1965, Milton Friedman, the scion of right-wing economics, famously declared, "We are all Keynesians now." If he were alive today, Friedman might add, "And we are all Keynesians still." The view of mainstream economics (and myself) is that the United States is suffering from a lack of aggregate demand, and the solution to our economic woes is economic stimulus, i.e., some combination of tax cuts, government spending, and an expansion of our monetary supply.

Still, if Friedman were to make his statement today, "we" would have to be a much more limited pronoun than it was back in 1965; while most economists are Keynesian, most of the Republican field is not. George W. Bush began and ended his presidency with major stimulus bills; his 2012 doppelganger, Rick Perry, regards stimulus as little more than a political parlor trick to pass present pain on to future generations.

It's hard to dismiss the non-Keynesians out of hand; economics is not a field where alternative hypotheses can be thrown away so lightly, since empirically proving anything is difficult, if not impossible. We can't even say for certain that the first round of stimulus actually created any jobs; estimates of the stimulus' impact, such as that of the Congressional Budget Office, rely upon models that take Keynesian dynamics as a given.

Perhaps it's worth asking, "What is the non-Keynesian explanation of our economic situation, and what are its policy prescriptions?" Here is one such answer:

From the Desk of Arthur B. Supplysider

Keynesians want us to believe that there's some economic switch out there, and if we toggle it, we'll go back to how things were

before the crash. The truth is, this is the new normal. Our pre-crash economy was an illusion. We vastly overestimated our own productivity, and made that self-deception feel real by living far beyond our means. Our current estimate of our productive capabilities, derided as "recessionary," is much more realistic — why should we think that there is a larger economy to rebound to? Our educational system has been stagnant for nearly half of a century. Of the resources available to us over the past decades, we've invested only a vanishingly small fraction for the future, choosing to consume rather than save. And of what we've decided to save for the future, large chunks of it have been misallocated — most recently we put trillions of dollars worth of labor, capital, tools, and material into the creation of houses rather than factories, tools, machines, training, and so on. It should come as no surprise that, having eaten our seed corn in previous years, we go hungry today.

Of course, any claim that this is the new normal must give some explanation of why unemployment is so high. After all, a high unemployment rate suggests that we could be producing much more than we currently do, simply by putting the job seekers back to work. So why are people out of work, and what would be the effect if they were put back to work?

With a realistic assessment of our productivity comes realistic wage offers from the free market. Were the unemployed put back to work, they would receive a good deal less in compensation than the inflated amounts they received before the crash. They haven't taken these low-paying jobs for a variety of reasons — perhaps their reservation wage (the wage that is just high enough to convince a person to work) is higher than their new market wage, or employers are statutorily barred from offering accurate wages.

What then is the policy solution? On the unemployment front, the policy needed is the exact opposite of what the left recommends. They call for increased unemployment benefits, but such benefits raise a worker's reservation wage. They call for debt forgiveness, but such moves would only remove impetus to choose labor over leisure. They support minimum wages, but such regulations only serve to bar job-seekers from obtaining employment.

On the GDP side of things, the way out of the hole is simple: invest more, and invest it wisely. Keynesian proposals to fix the economy only compound the problem. "Stimulus" is just another way to misallocate society's resources; firstly because it promotes

able bets with billions of scarce investment dollars. Nor does direct governmental control of the investment make matters better. Investment in transportation infrastructure, for example, is widely touted by the left wing, but in terms of return on investment, roads and bridges are nothing to write home about — in most cases, society would be better off if the resources devoted to extra infrastructure were instead left in private hands.

There is not so much of a gulf between us, supply siders, and the Keynesians — if you were to ask a Keynesian what the government should do to promote economic growth in the long term, they'd likely give you the same answer that we do: the gov-

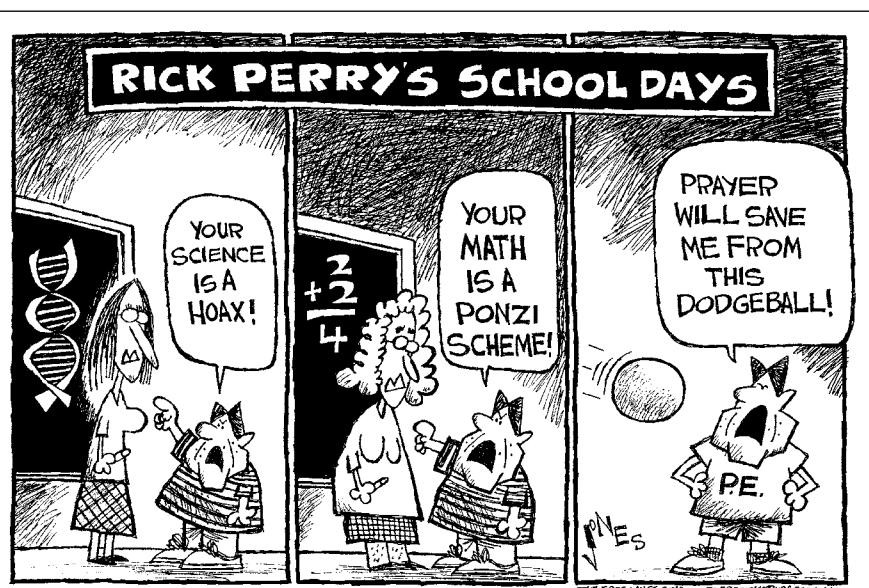
With a realistic assessment of our productivity comes realistic wage offers from the free market. Were the unemployed put back to work, they would receive a good deal less in compensation than the inflated amounts they received before the crash.

consumption over saving, and secondly because it takes the task of investing out of public hands and places it in those of government planners, who have a miserable record of investing wisely. A good example is the recent bankruptcy of Solyndra, a solar energy company once touted by the president himself as an exemplary model of government-supported enterprise. It now looks like the taxpayer will be on the hook for the greater part of the over \$500 million loan guarantee offered by the government.

But Solyndra is only the most recent and embarrassing of the government's misadventures in industry. Whether it involves companies such as General Motors, AIG, FNMA, or FDMC, the past couple years have seen the government make inadvis-

ernment should improve incentives to work, save, and invest. Get a Keynesian past his cult of "short-term" borrowing and spending and you've got a reasonable fellow. The tragedy is that Keynesians never think they've gotten out of the short term. We're three years into a recession, with unprecedented fiscal and monetary stimulus come and gone, and they're still convinced that utopia awaits with just a push of a button.

They're in for a rude awakening. Still, it would be better if they woke up sooner rather than later — the only way we're going to get out of this mess is with hard work and a long view, and waiting on a magic recovery that will never come only distracts us from the task at hand.



OPINION

Looking back at 9/11, bells ring across Boston

MIT community gathers in Killian Court to remember what happened 10 years ago

9/11, from Page 1

seemed to be frozen in time. Acquaintances shared casual nods of acknowledgement, but no words were spoken.

There was silence as the assembly waited for the ceremony to begin.

After the color guard, including representatives from each branch of the ROTC and members of the MIT Police, lined up against the doors leading to Killian Court, President Susan J. Hockfield, Chancellor Eric Grimson PhD '80, Chaplain Robert M. Randolph, Director of Facilities and Security John diFava, and Ellan F. Spero G made their way to the front of the crowd.

Throughout Boston, bells rang at 8:46 a.m. and 9:03 a.m. to indicate the solemn moments when two planes crashed into the twin towers. Even MIT's chapel bell rang, "despite the fact that it sounds more like a 'donk,'" Randolph joked.

Each of the administrators then shared a few words of respect. As Hockfield said, "We come together to honor those who lost their lives, and those that gave their lives."

Meanwhile, in the center of the color guard's queue, Sergeant Cheryl N. Vossmer held a folded American flag, an artifact from Ground Zero.

Ten years later, looking back

Back in 2001, after MIT learned of the attacks, members of the MIT Police were assigned as backup to various points around campus, and Vossmer found herself with the main group in the middle of campus. "I remember seeing a student sitting on the steps of the student center with a postcard of the twin towers just crying and crying and crying," she said.

Despite all the chaos, an eerie silence had lingered in the air. At around 5 p.m., Vossmer and Vice President and Secretary of the Corporation Kathryn A. Willmore were crossing Massachusetts Avenue, "and there was no traffic," Vossmer said. "Nothing."

It wasn't until Vossmer finally got home around 10 p.m. that the emotions of the day began to set in. "I remember hearing a fighter jet flying over my house and I just burst into tears. You're not supposed to hear those things."

Bus-loads of MIT students and staff volunteered to serve food, freshen the linens on a cot, or put a blanket and pillow in the church pews for the firefighters.

It was a trying time for members of the MIT community, to say the least. How does a university proceed with its responsibilities in light of a tragedy?

As Director of the Public Service Center, Sally Susnowitz knew her office would be busy after the attacks. Her memories swayed from what her office was doing to how her office was feeling. She remembers how a student assistant was sitting on a couch in her office weeping uncontrollably that day.

"We kind of decided that we should suspend normal activities really quickly and help people through what we were going through. We also started trying to think about what info people would want to have to be able to deal with this and how to help them get that information."

During her time as director, Susnowitz said the Public Service Center, which helped in MIT's responses to tragedies such as Hurricane Katrina in 2005 and the Japan tsunami earlier this year, has never seen a tragedy as horrific as September 11.

"We were dealing with forces that had no regard; you're dealing



MANOLIS KELLIS

Red, white, and blue lights were installed in the Green Building's windows to commemorate the 10th anniversary of Sept. 11, 2011.

with people who are trying to hurt other people, and I think Katrina and the tsunami, they were natural disasters and there wasn't that sense of perpetrator."

Almost immediately, the MIT community began to ask for ways to help. Perhaps due to engineering instinct, MIT saw a problem that needed a solution, but patience was needed as badly as generosity to balance supply and demand of volunteers, according to Susnowitz.

"One of the things we tried to do was channel people's desire to help into useful ways and to encourage them if necessarily to wait," Susnowitz said. "And that's often

attacks that a trip to pick up donated food from a restaurant brought back complicated emotions: "We drove by [Ground Zero] by and I was just like ... there's no words to describe the emotion, the pain, the devastation, all of those things, just — it was overwhelming."

There was no escaping the reality of 9/11 in New York. On a midnight to 7 a.m. shift, Vossmer found herself looking out towards where the World Trade Center used to be, until something in the nearby cemetery caught her eye.

"There was this tree that I saw — all of these little strings through it — there was something strange and I'm like, 'What is that?' I get up a little closer and actually inspected it. I see this little sparrow kind of picking this stuff. It was the string from mini-blinds, and they were actually mini-blinds coming in towards the street and the sparrow was using the string to make a nest. You look at this stuff and you're like, 'Oh my god.'"

Glass pieces littered the streets. Cement dust lined buildings, ledges, and even "walk/don't walk" signs at intersections.

While at St. Paul's, volunteers were invited to take one of many notes of encouragement written from people all over the world. The walls of the church were covered with these letters, according to Vossmer, who chose a humble heart cut out of red construction paper for herself.

On one side, it reads "We pray that you will remember: 'Blessed are those who mourn, for they will be comforted.' Matt 5:4" and spoke of the benefits of laughter to our health:

"When we have undergone the pain of losing loved ones, it is difficult to find humor in our daily lives, but to maintain our health to care for the children who lost a mother or father we must try. Here is a small story which I hope will at least bring a smile to your face —"

The other side shares a simple story:

true with disasters. Everybody's impulse is to help if they can possibly do that but it's very important for disaster sites to not have to deal with strangers or just stuff that's not needed."

That's where the MIT Police came in. Through the MIT Activities Committee, Vossmer helped organize three trips down to New York City, coordinating dates and times for when volunteers could finally arrive and what to bring. The bellies of the busses were stuffed with supplies donated by the MIT community, including winter coats, jeans, and boots.

"They desperately went through work boots," Vossmer said. The heat from smoldering metal beams at Ground Zero would simply melt the shoes if a volunteer stood in place for too long.

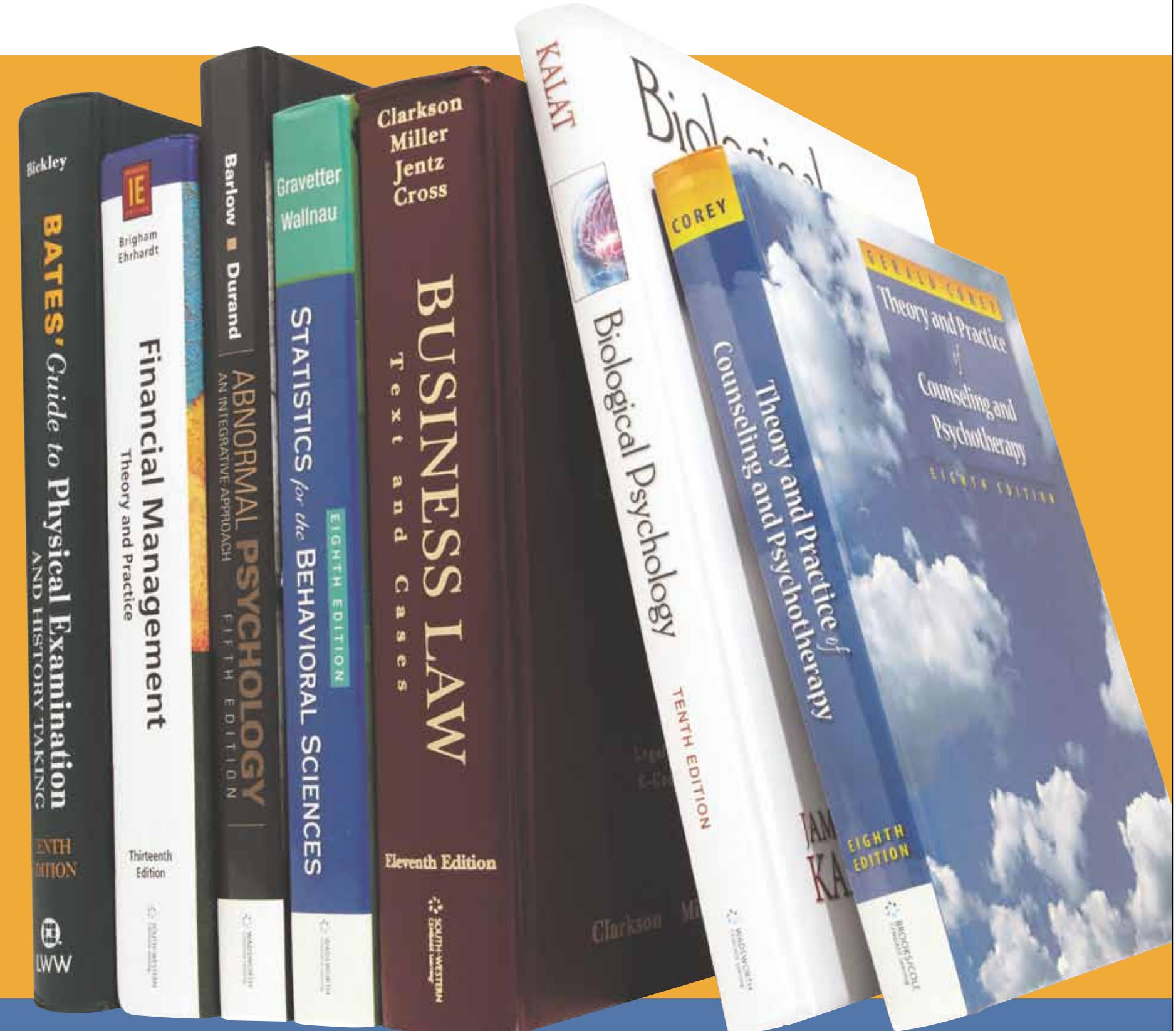
The trips took volunteers to St. Paul's Church, which stood right across the street from the towers' footprints. Bus-loads of MIT students and staff volunteered to serve food, freshen the linens on a cot, or put a blanket and pillow in the church pews for the firefighters and workers to catch a little sleep.

It was relatively soon after the



MAGGIE LLOYD—THE TECH
At the end of Sunday's ceremony, an ROTC/MIT Police Joint Honor Guard raised an American flag to the top of the flagpole in Killian Court, then lowered it to half-mast.

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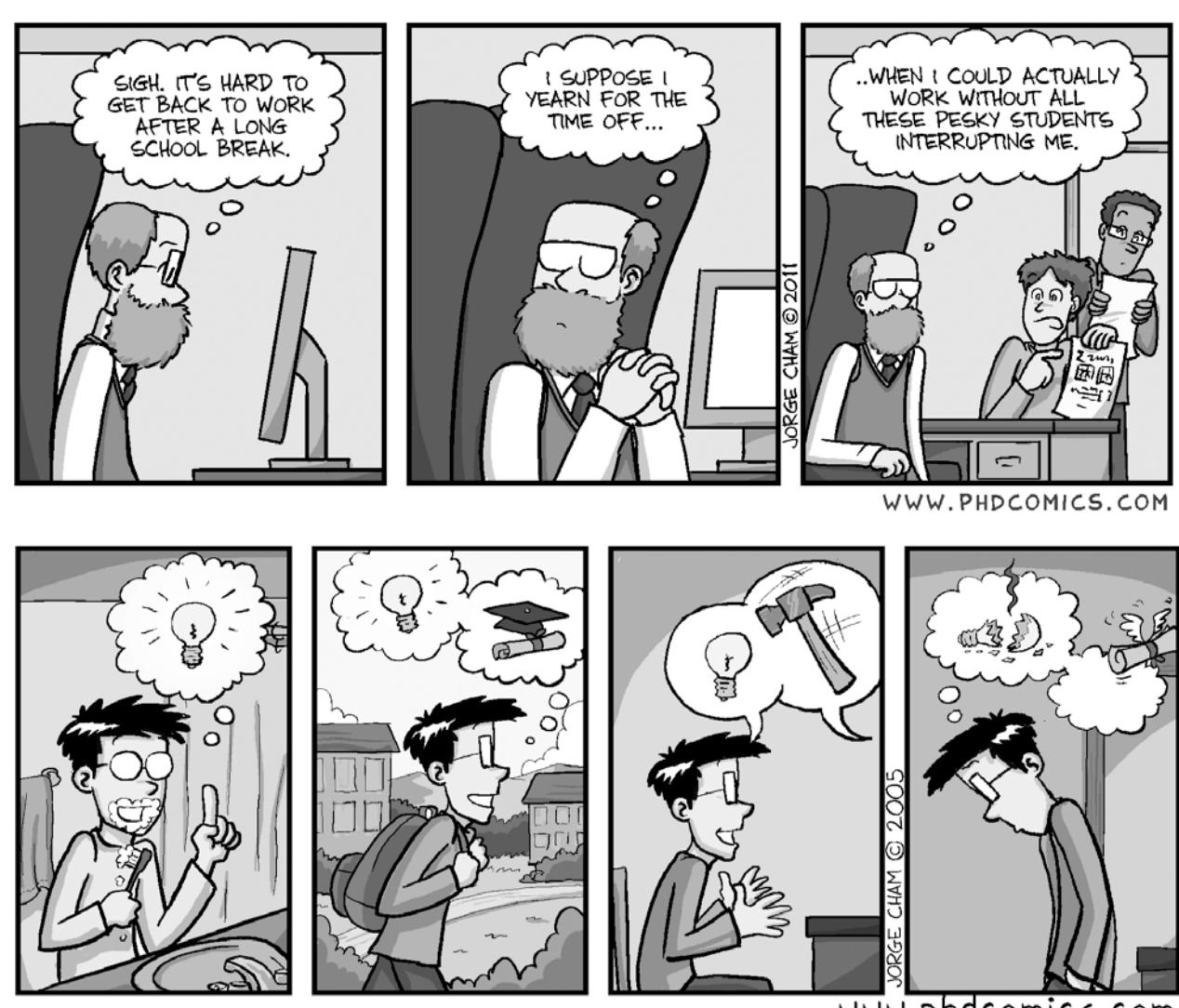
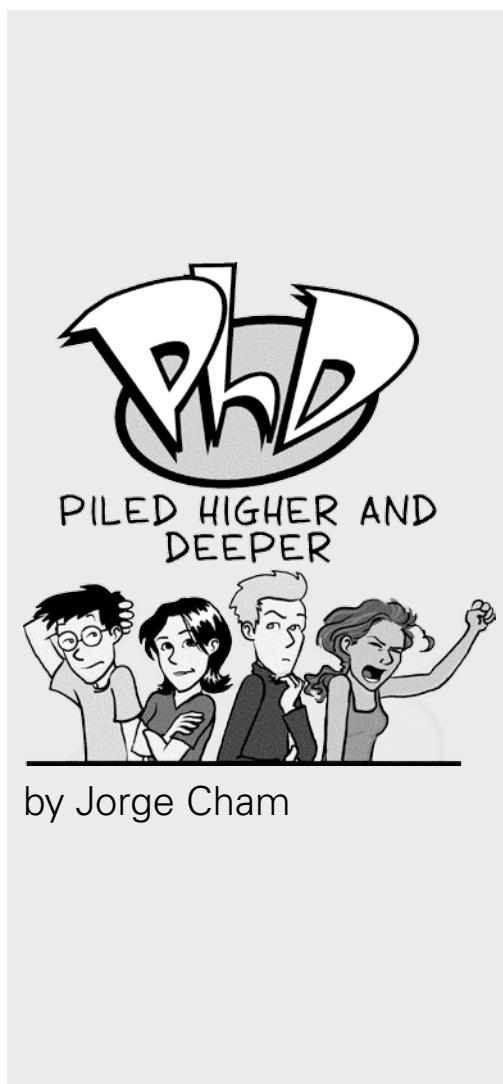
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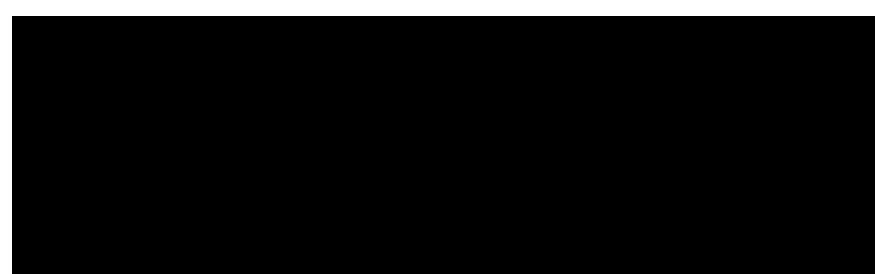
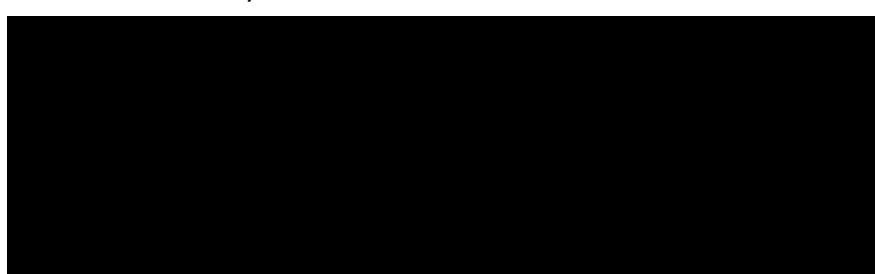
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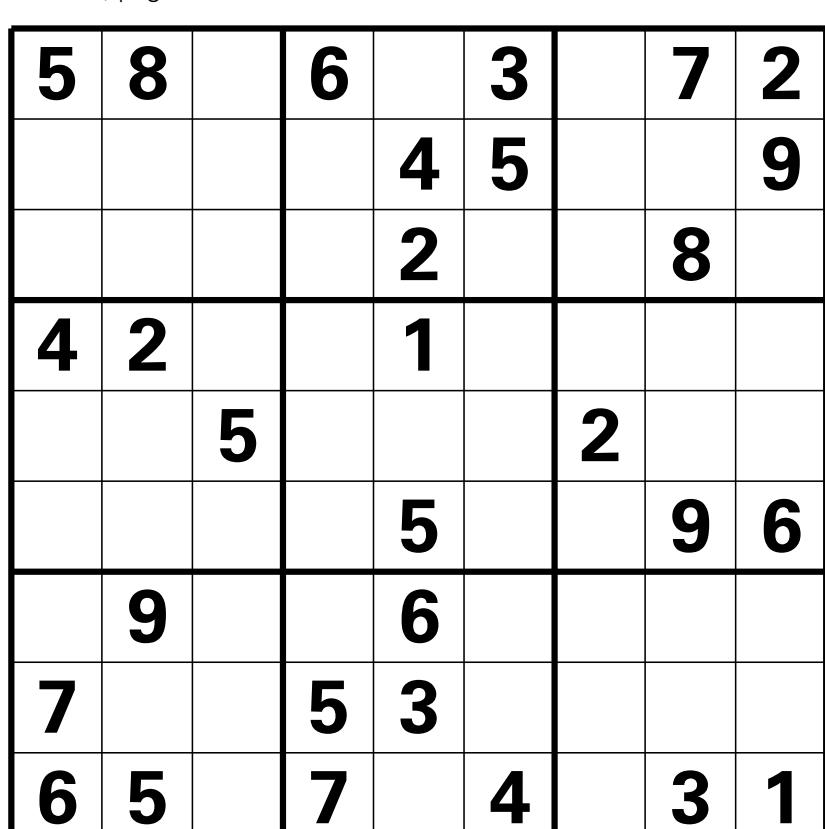


Dilbert by Scott Adams



Sudoku

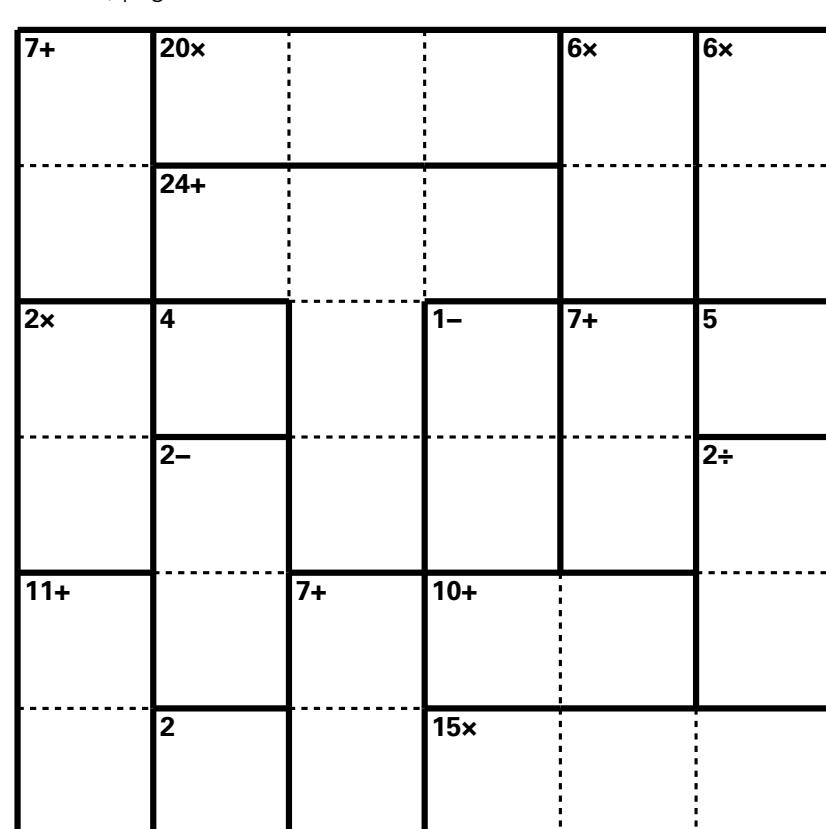
Solution page 17



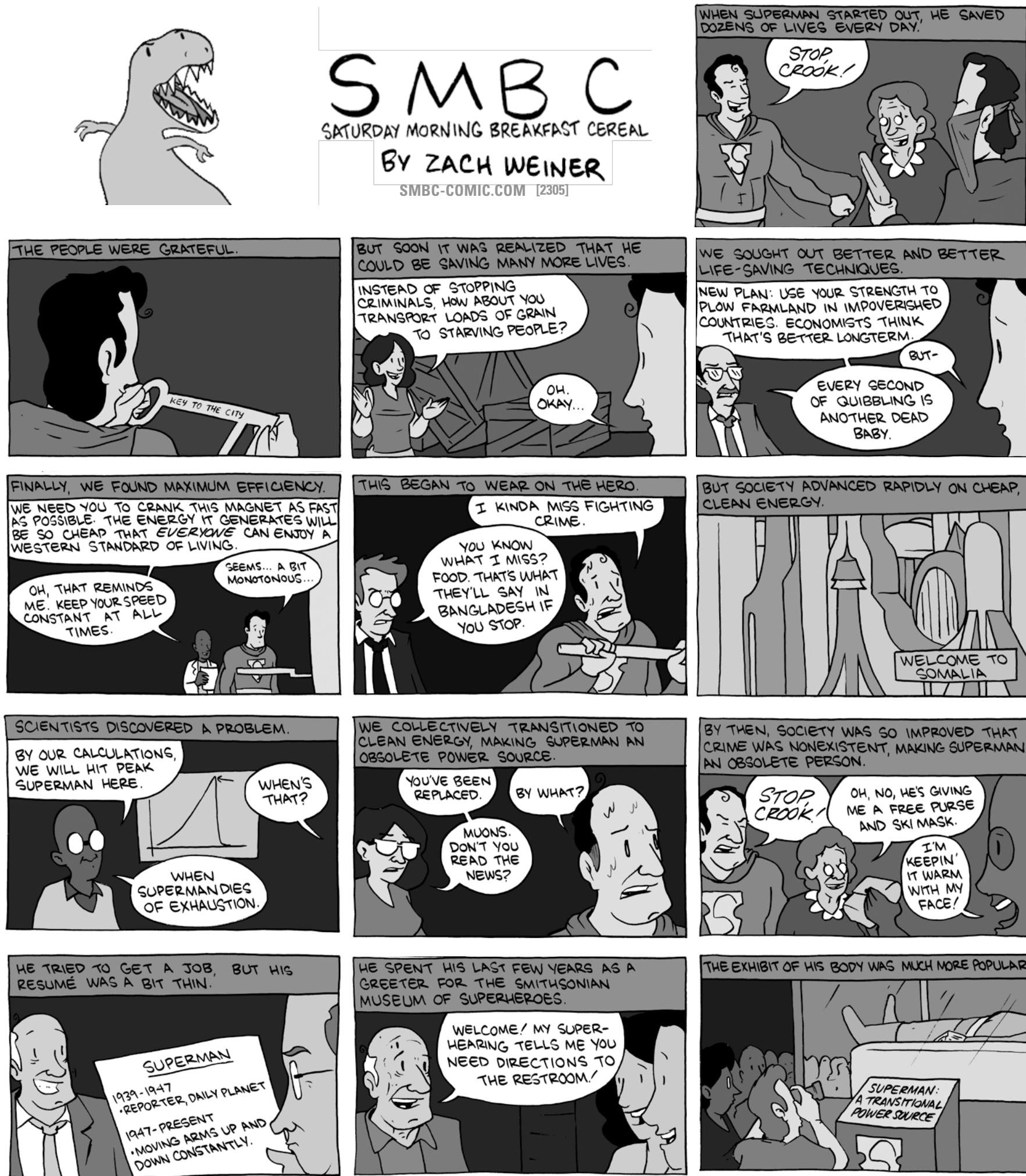
Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

Techdoku

Solution page 17



Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–6. Follow the mathematical operations for each box.



Crossword Puzzle I

Solution, page 11

ACROSS

- 1 Computer info
- 5 Staved container
- 9 Quitter's comment
- 14 Cassini of fashion
- 15 Bologna eight
- 16 Drew or Mariah
- 17 Grimm meanie
- 18 Arab garments
- 19 Go in
- 20 Cruisin' locale
- 22 Managed with less
- 23 Dry run
- 24 Like linoleum buildup
- 25 Chart
- 28 Evening star
- 30 Beach toy
- 34 Turk's neighbor
- 36 FedEx rival
- 37 Forearm bone
- 38 Possible title for this
puzzle?
- 42 Mustachioed surrealists
- 43 Part of TGIF
- 44 Single-handedly

45 Of the ear
46 Clobbers
49 G-man
50 "Twittering Machine" artist
52 Zany Martha
54 Poor performance
57 Fountain employee
61 "Dog and Butterfly" rock group
62 Grad
63 Zeno's home
64 Safin of tennis
65 Shuttle org.
66 Reunion group
67 Author of "Dred"
68 Tiptop
69 Yarn

DOWN

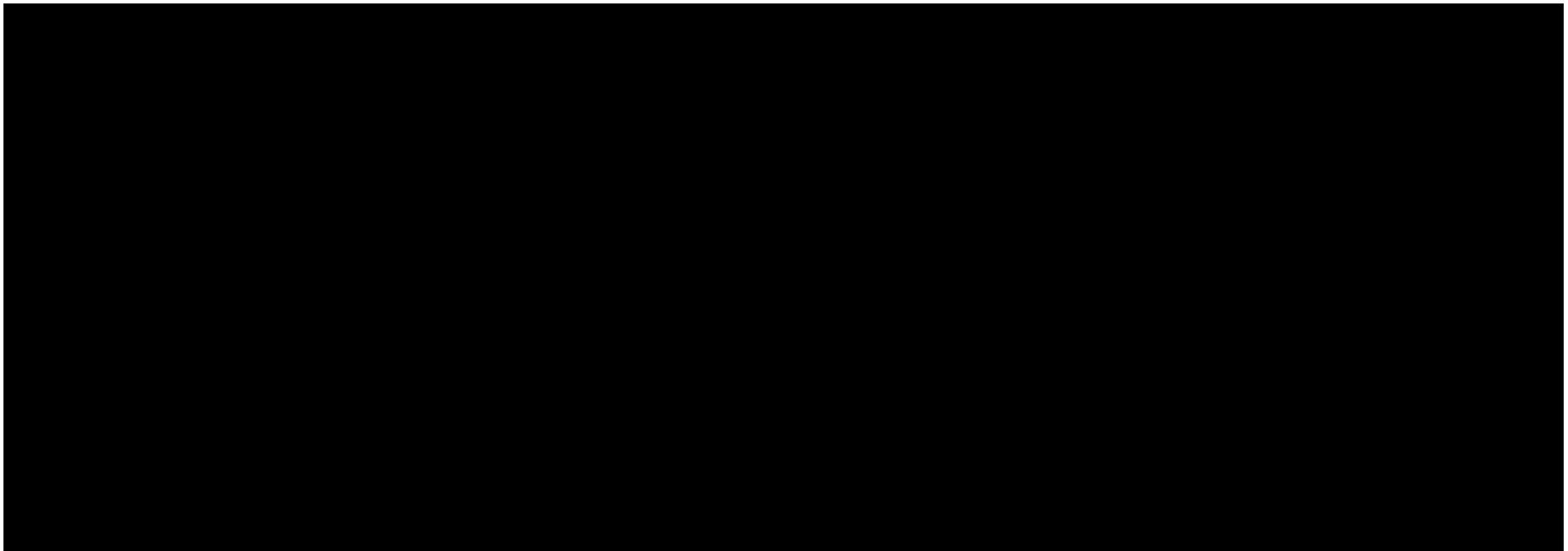
1 Impending ruin
2 Pond bloomers
3 Polo of "Meet the Parents"
4 Go-between
5 Granular

- 6 Plate appearances
- 7 Men-only affair
- 8 Ring stats
- 9 Mountain climbing aid
- 10 Sticky get-together
- 11 Comic Johnson
- 12 Have to have
- 13 Novice
- 21 Beelzebub
- 22 Boggy lowland
- 24 Shed tears
- 25 Bungle
- 26 Enlightened Buddhist
- 27 Corsican patriot
- 29 Prize money
- 31 Haughty
- 32 Cockamamie
- 33 Put on cargo
- 35 Gunfighter's survival characteristic
- 39 Fraught with risk
- 40 Nice to be?
- 41 No-stress class
- 47 Awaken
- 48 Mel Gibson title role

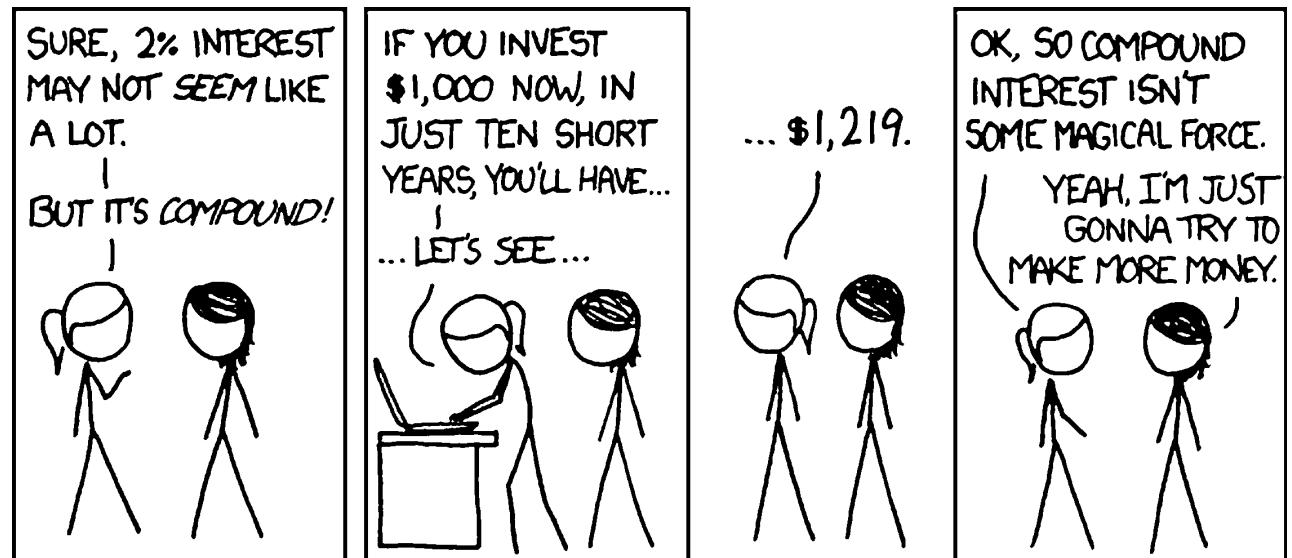
A crossword puzzle grid consisting of a 10x10 grid of squares. Some squares are blacked out, while others are white. Numbered entries are placed in the white squares, indicating the length of the word and its position. The entries are as follows:

- 1: 2 squares (top-left corner)
- 2: 3 squares
- 3: 4 squares
- 4: 5 squares (top-right corner)
- 5: 6 squares
- 6: 7 squares
- 7: 8 squares
- 8: 9 squares (bottom-right corner)
- 10: 11 squares
- 11: 12 squares
- 12: 13 squares
- 14: 15 squares (top-left block)
- 15: 16 squares
- 16: 17 squares (top-right block)
- 17: 18 squares
- 18: 19 squares (middle-right block)
- 19: 20 squares
- 20: 21 squares
- 21: 22 squares (middle-right block)
- 22: 23 squares
- 23: 24 squares
- 24: 25 squares (middle-right block)
- 25: 26 squares
- 26: 27 squares
- 27: 28 squares
- 28: 29 squares
- 29: 30 squares
- 30: 31 squares
- 31: 32 squares
- 32: 33 squares
- 33: 34 squares
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- 36: 37 squares
- 37: 38 squares
- 38: 39 squares
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- 40: 41 squares
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- 62: 63 squares
- 63: 64 squares
- 64: 65 squares
- 65: 66 squares
- 66: 67 squares
- 67: 68 squares
- 68: 69 squares
- 69: 70 squares

51 Central Perk serving?	57 High-five sound
53 VCR button	58 Cinders of comics
54 Resistance units	59 Actual
55 Notable deed	60 "Citizen __"
56 Casino game	62 "SNL" alum Gasteyer

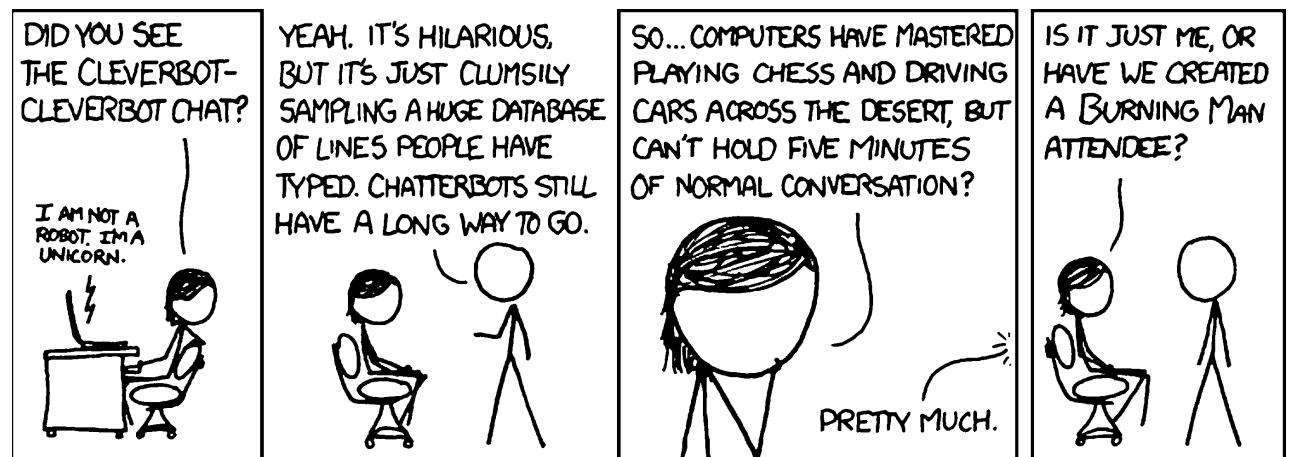


[947] Investing



But Einstein said it was the most powerful force in the universe, and I take all my investment advice from flippan remarks by theoretical physicists making small talk at parties.

[948] AI



And they both react boldly to showers.

Crossword Puzzle II

Solution, page 11

ACROSS

1 Choir member
6 Quite
10 Ending with slug or gab
14 Make amends
15 Faulkner's "As __ Dying"
16 Pearl Harbor site
17 Blazed furiously
18 Common nickname for a doter
19 66 and others: Abbr.
20 Weightlifting event
23 Ben-Gurion, e.g.
26 "It's __ business"
27 Kind of biological network
28 Sea
30 Golf course pest
32 Corp. money manager
35 Fighting
36 Gallery hanging
37 Hang onto
38 ID with hyphens
39 Spinning toy manipulated with sticks
43 River in Lyons
44 Belfast's province

45 Early Ford success

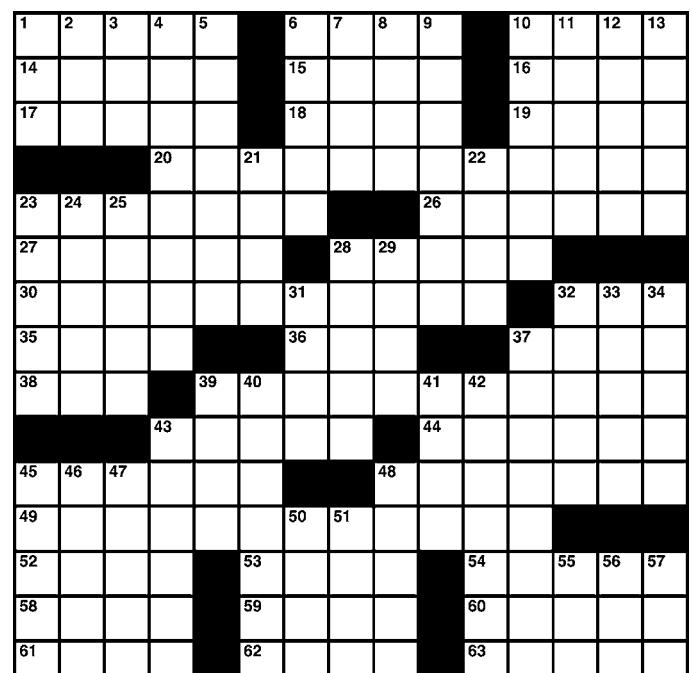
48 Actors, often
49 Honest info
52 Road sign silhouette
53 Debt indicators
54 Ticked off
58 Like some vaccines
59 Dresden's river
60 Landlocked African country
61 A handful of
62 Navy commando
63 Gothic house feature

DOWN

1 La Brea goo
2 Seventh Greek letter
3 Christmas quaff
4 200 milligrams, to a jeweler
5 Original primer used to
 paint the Golden Gate
 Bridge
6 Source of the Law
7 __ Bator, Mongolia
8 Where Jesus turned water
 to wine

9 Cape Cod site of a JFK museum

- 10 How some jump?
- 11 Corroded
- 12 Sex researcher Hite
- 13 Mammoth features
- 21 Contemporary of Dizzy
and Billie
- 22 Finished
- 23 Early Peruvians
- 24 Senate posts
- 25 Confrontation
- 28 Carried
- 29 Classroom drilling
- 31 Come out ahead
- 32 British actor Robert, the
original Colonel Pickering
in "My Fair Lady"
- 33 Candidate's handout
- 34 Trash emanations
- 37 Common crowd reaction
in monster films
- 39 Colombian city
- 40 Some heroes
- 41 Sport for 300-pounders
- 42 Like lovers skipping



church?	48 III-fated Ford
43 Pharmaceutical giant that developed Celebrex	50 Putter's target
45 Windows predecessor	51 Very big wind
46 Alamogordo's county	55 Soviet spy org.
47 Nightmare, e.g.	56 Snakelike fish
	57 Hip hop Dr.

Senate candidates

Constituency	Candidate
East Campus	Trevor J. Mulchay '15
East Campus	Leonid Grinberg '14
Fraternities	Michael P. Walsh '13
Macgregor	Ryan T. Normandin '13
Macgregor	Jiahao Liang '14
Macgregor	Pamela A. Montalvo '12
Maseeh Hall	Jennifer B. Plotkin '15
Maseeh Hall	Sungmin Cho '14
Maseeh Hall	Caroline B. Shinkle '15
Off campus	Rachel E. Meyer '10
Random Hall	Alexandra M. Westbrook '13
Senior House	Katy I. Gero '13
Sororities	Katherine Y. Feng '13

Council candidates

Position	Candidate
President	Jessica J. Yang '15
President	Jeffery M. Sperling '15
President	Jared L. Wong '15
President	Xiao (Cathy) Zhou '15
President	Adisa Kruayatidee '15
Vice president	Marco J. Salazar '15
Vice President	Elizabeth A. Murphy '15
Publicity Chair	Joanne Y. Zhou '15

UA Senate and Class of 2015 Council candidates as of Monday evening. Several dormitories and positions are currently uncontested, but that may change as additional candidates file before the late deadline at 5 p.m. today. Elections begin Wednesday and last through Friday.

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Solution to Crossword I

from page 9

D	A	T	C	A	S	K	I	C	A	N	T
O	L	E	G	O	T	T	O	R	S	U	F
O	G	R	E	A	B	A	C	A	E	H	E
M	A	I	N	D	R	A	G	E	N	T	R
T	E	S	T	W	A	X	Y	T	O	R	S
M	A	P	V	E	S	P	E	R	S	U	T
I	R	A	Q	I	U	P	S	A	N	A	E
S	H	O	U	L	D	E	R	T	H	E	A
D	A	L	I	I	T	S	A	L	O	N	E
O	T	I	C	R	E	A	M	S	F	E	D
K	L	E	E	R	A	Y	E	E	E	E	E
O	F	F	D	A	S	O	D	A	J	E	R
H	E	A	R	T	A	L	U	M	E	L	E
M	A	R	A	T	N	A	S	A	C	L	A
S	T	O	W	E	A	P	E	X	T	A	L

Solution to Crossword II

from page 10

T	E	N	O	R	S	S	U	C	H	F	E
A	T	O	N	E	I	L	A	Y	O	A	H
R	A	G	E	D	N	A	N	A	R	T	E
C	L	E	A	N	D	J	E	R	K		
I	S	R	A	E	L	I	N	O	N	E	S
N	E	U	R	A	L	R	Y	N	O	N	E
C	A	N	D	A	G	O	O	S	C	F	O
A	T	I	T	A	R	H	O	D	H	O	D
S	S	N	C	H	I	N	E	Y	O	O	O
S	A	O	N	E	U	L	S	T	E	R	E
M	O	D	E	L	A	E	M	O	T	E	R
S	T	R	A	I	G	H	D	O	P	E	E
D	E	R	R	I	O	U	S	I	R	K	E
O	R	A	L	E	B	E	N	I	G	E	R
S	O	M	E	A	S	A	L	G	A	B	L

Justice is sweet and musical, but injustice is harsh and discordant. - Thoreau



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Sonata in F major for Violin and Piano (Felix Mendelssohn, 1809 -1847)

Nocturne for Piano "Homage to John Field", Op. 33 (Samuel Barber, 1910-1981)

Piano Sonata in E-flat minor, Op. 26 (Samuel Barber, 1910 - 1981)

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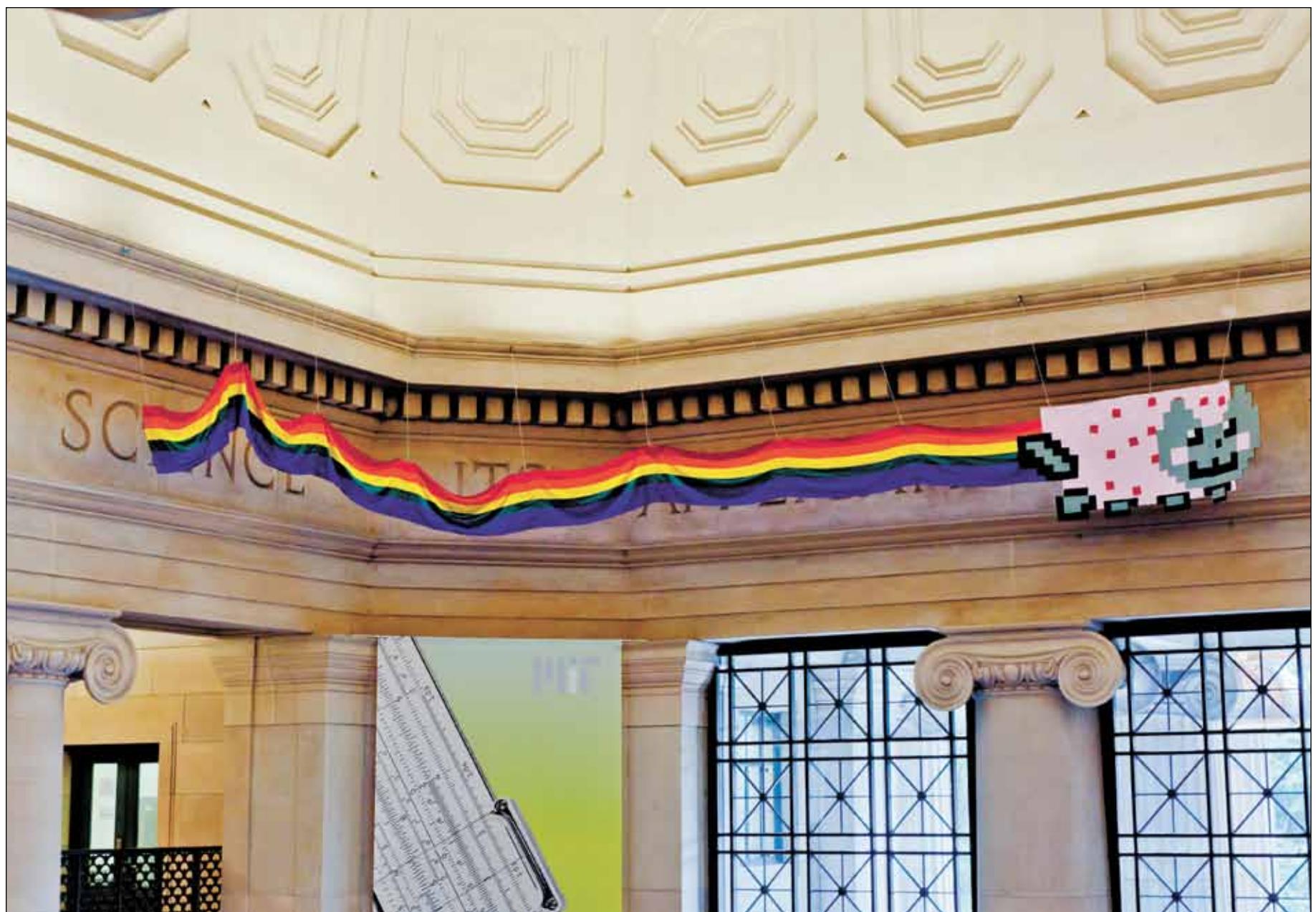
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Room 4-145

September 15th, 2011

6-7:30pm

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GREG STEINBRECHER—THE TECH

Hackers installed a 40-foot-long Nyan Cat and rainbow trail in Lobby 7 last week. A popular internet meme, Nyan Cat is a flying cat with a Pop-Tart body that leaves behind a rainbow trail, whose journey is frequently set to the Japanese Vocaloid song *Nyanyanyanyanyanya*, according to <http://knowyourmeme.com>.



Gerry Tesauro
IBM Research

CSAIL Colloquium

Date: Thursday, September 15, 2011
Venue: MIT Stata Center, Building 32-123/Kirsch Auditorium
Time: 4:30-5:30pm (refreshments at 4:15pm)

How Watson Learns Superhuman Jeopardy! Strategies

Abstract: Major advances in Question Answering technology were needed for Watson to play Jeopardy! at championship level -- the show requires rapid-fire answers to challenging natural language questions, broad general knowledge, high precision, and accurate confidence estimates. In addition, Jeopardy! features four types of decision making carrying great strategic importance: (1) selecting the next clue when in control of the board; (2) deciding whether to attempt to buzz in; (3) wagering on Daily Doubles; (4) wagering in Final Jeopardy. This talk describes how Watson makes the above decisions using innovative quantitative methods that, in principle, maximize Watson's overall winning chances. We first describe our development of faithful simulation models of human contestants and the Jeopardy! game environment. We then present specific learning/optimization methods used in each strategy algorithm: these methods span a range of popular AI research topics, including Bayesian inference, game theory, Dynamic Programming, Reinforcement Learning, and real-time "rollouts." Application of these methods yielded superhuman game strategies for Watson that significantly enhanced its overall competitive record.

Joint work with David Gondek, Jon Lenchner, James Fan and John Prager.

Biography: Gerald Tesauro is a Research Staff Member at IBM's TJ Watson Research Center. He is best known for developing TD-Gammon, a self-teaching neural network that learned to play backgammon at human world championship level. He has also worked on theoretical and applied machine learning in a wide variety of other settings, including multi-agent learning, dimensionality reduction, computer virus recognition, computer chess (Deep Blue), intelligent e-commerce agents and autonomic computing. Tesauro has a PhD in theoretical physics from Princeton University.

Host: Leslie Kaelbling, CSAIL

For more information: www.csail.mit.edu or 617.253.0145



Engineered T-cells vanquish cancer in patients

By Denise Grady
THE NEW YORK TIMES

PHILADELPHIA — A year ago, when chemotherapy stopped working against his leukemia, William Ludwig signed up to be the first patient treated in a bold experiment at the University of Pennsylvania. Ludwig, then 65, a retired corrections officer from Bridgeton, N.J., felt his life draining away and thought he had nothing to lose.

Doctors removed a billion of his T-cells — a type of white blood cell that fights viruses and tumors — and gave them new genes that would program the cells to attack his cancer. Then, the altered cells were dripped back into Ludwig's veins.

At first, nothing happened. But after 10 days, hell broke loose in his hospital room. He began shaking with chills. His temperature shot up. His blood pressure shot down. He became so ill that doctors moved him into intensive care and warned that he might die. His family gathered at the hospital, fearing the worst.

A few weeks later, the fevers were gone. And so was the leukemia. There was no trace of it anywhere.

A year later, Ludwig is still in complete remission. Before, there were days when he could barely get out of bed; now, he plays golf and does yard work.

"I have my life back," he said.

Ludwig's doctors have not claimed that he is cured — it is too soon to tell — nor have they declared victory over leukemia on the basis of this experiment, which involved only three patients. The research, they say, has far to go; the treatment is still experimental, not available outside of studies.

But scientists say the treatment

that helped Ludwig, described recently in *The New England Journal of Medicine* and *Science Translational Medicine*, may signify a turning point in the long struggle to develop effective gene therapies against cancer. And not just for leukemia patients: Other cancers may also be vulnerable to this novel approach — which employs a disabled form of HIV-1, the virus that causes AIDS, to carry cancer-fighting genes into the patients' T-cells.

In essence, the team is using gene therapy to accomplish something that researchers have hoped to do for decades: train a person's own immune system to kill cancer cells.

A few weeks later, the fevers were gone. And so was the leukemia. There was no trace of it.

Two other patients have undergone the experimental treatment. One had a partial remission, the other had a complete remission. All three had had advanced chronic lymphocytic leukemia and had run out of chemotherapy options. Usually, the only hope for a remission in such cases is a bone-marrow transplant, but these patients were not candidates for it.

Dr. Carl June, who led the research and directs translational medicine in the Abramson Cancer Center at the University of Pennsylvania, said that the results stunned even him and his colleagues, Dr. David L. Porter, Dr. Bruce Levine and Dr. Michael Kalos. They had hoped to see some benefit but had not dared dream of complete, pro-

longed remissions. Indeed, when Ludwig began running fevers, the doctors did not realize at first that it was a sign that his T-cells were engaged in a furious battle with his cancer.

Other experts in the field said the results were a major advance.

"It's great work," said Dr. Walter J. Urba, from the Providence Cancer Center and Earle A. Chiles Research Institute in Portland, Ore. He called the patients' recoveries remarkable, exciting and significant. "I feel very positive about this new technology. Conceptually, it's very, very big."

Hitting a genetic jackpot

To make T-cells search out and destroy cancer, researchers must equip them to do several tasks: recognize the cancer, attack it, and multiply and persist inside the patient. A number of research groups have been trying to do this, but the T-cells they engineered could not accomplish all the tasks.

The University of Pennsylvania team seems to have hit all the targets at once. Inside the patients, the T-cells modified by the researchers multiplied to 1,000 to 10,000 times the number infused, wiped out the cancer and then gradually diminished, leaving a population of "memory" cells that can quickly proliferate again if needed.

The researchers say they are not sure which parts of their strategy made it work — special cell-culturing techniques, the use of HIV-1 to carry new genes into the T-cells, or the particular pieces of DNA that they selected to reprogram the T-cells.

The concept of doctoring T-cells genetically was developed in the 1980s by Dr. Zelig Eshhar at the Weizmann Institute of Science

in Rehovot, Israel. It involves adding gene sequences from different sources to enable the T-cells to produce what researchers call chimeric antigen receptors, or CARs — protein complexes that transform the cells, in June's words, into "serial killers."

Ludwig's disease, chronic lymphocytic leukemia, is a cancer of B-cells, the part of the immune system that normally produces antibodies to fight infection. All B-cells, whether healthy or leukemic, have on their surfaces a protein called CD19. To treat patients with the disease, the researchers hoped to reprogram their T-cells to find CD19 and attack B-cells carrying it.

The researchers say they are not sure which parts of their strategy made it work.

But which gene sequences should be used to reprogram the T-cells, from which sources? And how do you insert them?

Various research groups have used different methods. Viruses are often used as carriers (or vectors) to insert DNA into other cells because that kind of genetic sabotage is exactly what viruses normally specialize in doing. To modify their patients' T-cells, June and his colleagues tried a daring approach: They used a disabled form of HIV-1. They are the first ever to use HIV-1 as the vector in gene therapy for cancer patients (the virus has been used in other diseases).

The virus is a natural for this kind of treatment, June said, because it evolved to invade T-cells. The idea

of putting any form of the AIDS virus into people sounds a bit frightening, he acknowledged, but the virus used by his team was "gutted" and was no longer harmful. Other researchers had altered and disabled the virus by adding DNA from humans, mice and cows, and from a virus that infects woodchucks and another that infects cows.

Each bit was chosen for a particular trait, all pieced together into a vector that June called a "Rube Goldberg-like solution" and "truly a zoo."

"It incorporates the ability of HIV to infect cells but not to reproduce itself," he said.

To administer the treatment, the researchers collected as many of the patients' T-cells as they could, by passing their blood through a machine that removed the cells and returned the other blood components. The T-cells were exposed to the vector, which transformed them genetically, and then were frozen. Meanwhile, the patients were given chemotherapy to deplete any remaining T-cells, because the native T-cells might impede the growth of the altered ones. Finally, the T-cells were infused back into the patients.

The treatment wiped out all of the patients' B-cells, both healthy ones and leukemic ones, and will continue to do for as long as the new T-cells persist in the body, which could be forever (and ideally should be, to keep the leukemia at bay). The lack of B-cells means that the patients may be left vulnerable to infection and will need periodic infusions of a substance called intravenous immune globulin to protect them.

One thing that is not clear is why Patient 1 and Patient 3 had

T-cells, Page 15

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T-cells, from Page 14

complete remissions, and Patient 2 did not. The researchers said that when Patient 2 developed chills and fever, he was treated with steroids at another hospital, and the drugs may have halted the T-cells' activity. But they cannot be sure. It may also be that his disease was too severe.

Not without danger to patients

While promising, the new techniques developed by the University of Pennsylvania researchers are not without danger to patients. Engineered T-cells have attacked healthy tissue in patients at other centers. Such a reaction killed a 39-year-old woman with advanced colon cancer in a study at the National Cancer Institute, researchers there reported last year in the journal Molecular Therapy.

Researchers at Memorial Sloan Kettering Cancer in New York also reported a death last year in a T-cell trial for leukemia (also published in Molecular Therapy). An autopsy found that the patient had apparently died from sepsis, not from the T-cells, but because he died just four days after the infusion, the researchers said they considered the treatment a possible factor.

June said his team hopes to use T-cells against solid tumors, including some that are very hard to treat, like mesothelioma and ovarian and pancreatic cancer. But possible adverse reactions are a real concern, he said, noting that one of the protein targets on the tumor cells is also found on membranes that line the chest and abdomen. T-cell attacks could cause serious inflammation in those membranes and mimic lupus, a serious autoimmune disease.

Even if the T-cells do not hit innocent targets, there are still risks. Proteins they release could cause a "cytokine storm," high fevers, swell-

ing, inflammation and dangerously low blood pressure — which can be fatal. Or, if the treatment rapidly kills billions of cancer cells, the debris can damage the kidney and cause other problems.

Even if the new T-cell treatment proves to work, the drug industry will be needed to mass produce it. But June said the research is being done only at universities, not at drug companies.

For the drug industry to take interest, he said, there will have to be overwhelming proof that the treatment is far better than existing ones.

When doctors approached Ludwig, he thought that if the trial could buy him six months or a year, it would be worth the gamble. But even if the study did not help him, he felt it would still be worthwhile if he could help the study.

When the fevers hit, he had no idea that might be a good thing. But a few weeks later, he said, His oncologist, Alison Loren, told him, "We can't find any cancer in your bone marrow."

Remembering the moment, Ludwig paused and said, "I got goose bumps just telling you those words."

Before the study, Ludwig was weak, suffered repeated bouts with pneumonia and was wasting away. Now, he is full of energy. He has gained 40 pounds. He and his wife bought an RV, in which they travel with their grandson and nephew.

"I feel normal, like I did 10 years before I was diagnosed," Ludwig said. "This clinical trial saved my life."

Loren said in an interview, "I hate to say it in that dramatic way, but I do think it saved his life."

Ludwig said that Loren told him and his wife something he considered profound. "She said, "We don't know how long it's going to last. Enjoy every day," Ludwig recalled.

"That's what we've done ever since."

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Ex-Genzyme chief gives \$10m to MGH cancer unit

By Robert Weisman
THE BOSTON GLOBE

Retired biotechnology executive Henri A. Termeer, who built Genzyme Corp. into the largest US company specializing in drugs to treat rare genetic disorders, is donating \$10 million to Massachusetts General Hospital to establish it as a world leader in personalized medicine.

The initial focus will be on drugs tailored to the genetic makeup of tumors, especially breast cancers, lung cancers, and leukemia.

The new Henri and Belinda Termeer Center for Targeted Therapies will be aimed at bringing the emerging field into the forefront of treatment and research. It's initial focus will be on drugs tailored to the genetic makeup of tumors, especially breast cancers, lung cancers, and leukemias. Currently, there are few effective treatments for patients with less common types of the diseases.

Targeted therapies attack points of vulnerability in a tumor's genetic makeup, disabling pathways that enable the cancer to survive and grow.

"I hope this will help Massachusetts be recognized globally as the knowledge center in targeted medicines," said Termeer, 65, who stepped down as chief executive of Cambridge-based Genzyme last spring. "This is a global effort, but Massachusetts has the responsibility to lead, to use the talents and capabilities it has built over many years."

The center will be run by Dr.

Jose Beselga, one of the world's leading cancer specialists, who was recruited from Vall d'Hebron Institute of Oncology in Barcelona last year to be chief of hematology-oncology at Mass. General. It will be part of the 25-year-old Massachusetts General Hospital Cancer Center, led by Dr. Daniel A. Haber.

Termeer's gift is one of the largest earmarked for fighting

cancer in the hospital's history, but the hospital will solicit additional money from Boston area philanthropists, starting Tuesday night at a reception at the Four Seasons Hotel in Boston, during which the center will officially be unveiled. Hospital officials hope to raise another \$10 million over the next two years to expand the center's work.

Mass. General, the largest hospital in New England and the nation's largest research hospital, will use the Termeer donation to renovate space on the seventh floor of its Yawkey Center for Outpatient Care, where the Termeer Center will be located.

The money will also be used to buy medical equipment, recruit new employees, and offset the cost of clinical trials it will host. Initially, the center will have about 25 staff members, including new hires and current hospital employees who will be redeployed.

Doctors and scientists working in the Termeer Center hope to test

a new generation of molecular-based targeted drugs that could transform cancer care.

"In the future, we're going to see cancers defined not only by their site of origin but by the molecular alterations that are the drivers of particular cancers," Beselga said.

Mass. General already is among the most advanced hospitals in the world in testing personalized medicines. Over the past year alone, the number of clinical trials it sponsors using targeted therapies has roughly tripled, Beselga said. In the spring, Dr. Alice Tsang Shaw, a Mass. General thoracic oncologist, presented data to the American Society of Clinical Oncology showing promising results from a Pfizer Inc. drug that works by inhibiting a genetic mutation in non-small cell lung cancer cells.

Beselga said such developments suggest doctors and scientists are taking the right approach with targeted medicines. But he cautioned that tumors eventually can develop resistance to the new drugs so researchers may have to understand genetics well enough to outwit the tumors with additional treatments or drug combinations.

Personalized medicine programs are underway in other area research labs, including at the Dana-Farber Cancer Institute in Boston, which like Mass. General is a Harvard University teaching hospital, and the Broad Institute of MIT and Harvard in Cambridge. Mass. General plans to work with both, along with other hospitals and universities in the United States and abroad. It also will collaborate with drug makers such as Switzerland's Novartis

AG, which has its global research headquarters in Cambridge, and Sanofi SA, the French company that bought Genzyme for \$20.1 billion in April.

As part of that deal, Termeer cashed in Genzyme shares worth at least \$145.9 million, in addition to receiving a \$12.5 million severance package, according to a regulatory filing. Termeer said his gift to Mass. General is an important step in a larger plan to promote the field of personalized medicine through work with biotechnology start-ups, investment groups, regulators, and health insurance payers that must develop new ways to pay for targeted therapies.

Termeer earlier this year joined the boards of two biotechs, AVEO Pharmaceuticals Inc. in Cambridge, which has a kidney

territory."

Termeer said he also was inspired by his wife Belinda's experience with a targeted diagnostic test when she had two tumors removed from her breast four years ago. Belinda Termeer was treated at Mass. General, where her husband sits on the board of trustees. On his advice, her tissue samples were sent to a California company, Genomic Health Inc., which determined they were slow-growing. That allowed her to forego chemotherapy.

"There's a whole entrepreneurial world developing around doing this and doing it better," Termeer said. His hope is that such advanced testing — and highly specialized drugs that attack specific cancers — will one day be mainstream. "The ultimate goal is that this targeted approach

Doctors and scientists working in the Termeer Center hope to test a new generation of molecular-based targeted drugs that could transform cancer care.

cancer drug in late-stage development, and Verastem Inc., a Cambridge start-up developing treatments to attack cancer stem cells.

His push for more personalized medicine is motivated by his work at Genzyme, which pioneered outreach programs for small populations of patients with rare enzyme deficiencies such as Gaucher and Fabry diseases, and convinced regulators to approve treatments for those debilitating conditions.

"In a way, Henri has been a precursor of this [Mass. General] effort in his work with rare diseases at Genzyme," Beselga said. "So he's playing in very familiar

becomes the way you think about research and innovation," he said.

Massachusetts General Hospital

As chief executive of Cambridge's Genzyme Corp. for nearly three decades, Henri A. Termeer built the largest US biotechnology company focused on specialized drugs to target rare genetic disorders. Today, the Massachusetts General Hospital is set to disclose that Termeer, 65, who retired from Genzyme this spring, will donate \$10 million to endow a new Henri and Belinda Termeer Center for Targeted Therapies at the Harvard University hospital.

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from page 8

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2	3	7	8	4	5	1	6	9
9	4	6	1	2	7	5	8	3
4	2	9	3	1	6	8	5	7
3	6	5	9	7	8	2	1	4
1	7	8	4	5	2	3	9	6
8	9	3	2	6	1	7	4	5
7	1	4	5	3	9	6	2	8
6	5	2	7	8	4	9	3	1

Solution to Techdoku

from page 8

3	5	1	4	2	6
4	6	2	5	3	1
2	4	6	3	1	5
1	3	5	2	6	4
5	1	3	6	4	2
6	2	4	1	5	3

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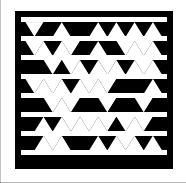
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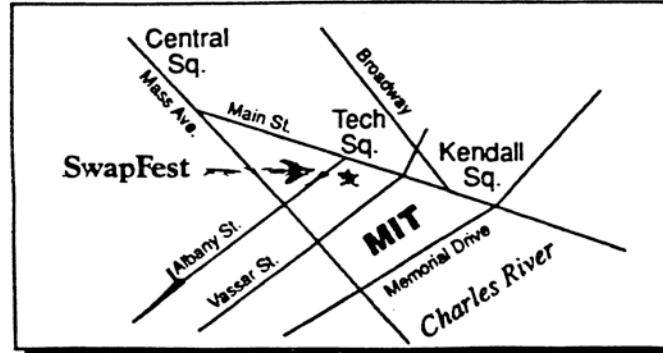
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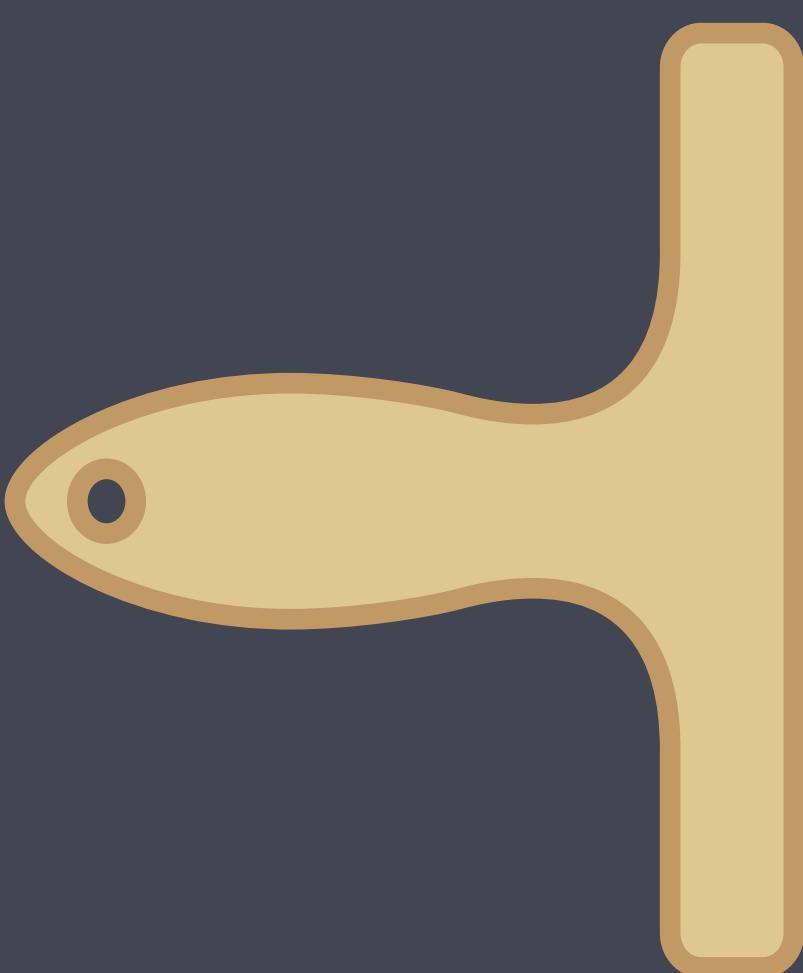
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Remembering MIT's efforts to aid 9/11 victims

Vossmer tells about bringing bus loads of MIT community members to Ground Zero

9/11, from Page 6

Six-year old Angie and her four-year old brother Joel were sitting together in church. Joel giggled, sang, and talked out loud. Finally, his big sister had had enough. "You're not supposed to talk out loud in church."

"Why? Who's going to stop me?" Joel asked.

Angie pointed to the back of the church and said, "See those two men standing by the door? They're ushers."

Two other mementos Vossmer has from the trips include a police mourning badge, with a black stripe and "NYC 9/11," which she wore on Sunday's 10-year anniversary memorial, and a humble metal cross, a token of their appreciation from New York firefighters. It was cut by the steel workers at Ground Zero, and is made from one of the last steel beams from Ground Zero.

With each trip, Vossmer says she experienced less and less shock at the sight of Ground Zero. The third and final trip to New York occurred near Easter in 2002, when volunteers brought Easter baskets assembled at MIT.

"The MIT community was phenomenal in assisting with donations," Vossmer said.

Community

Indeed, the story of MIT's response was one of community; individuals came together to use whatever skills they had to help the campus cope.

On the day after the attacks, Professor John Fernandez was contacted by Kirk D. Kolenbrander of the President's Office to help create a tangible memorial for MIT. Fernandez, who taught "Materials and

Construction" and "Building Systems" in the Department of Architecture, had given a talk about the collapse of the World Trade Center within a day of the attacks; he also used to work as an architect in New York City.

"Back then I had only been

at MIT for two years," he said. "I still counted New York City as my home."

During the rapid design period, it was agreed that the memorial had to bring the community together. Within 30 hours, Fernandez' design, a scale replica of an ex-

terior wall of the World Trade Center, came to life with the help of the Department of Facilities.

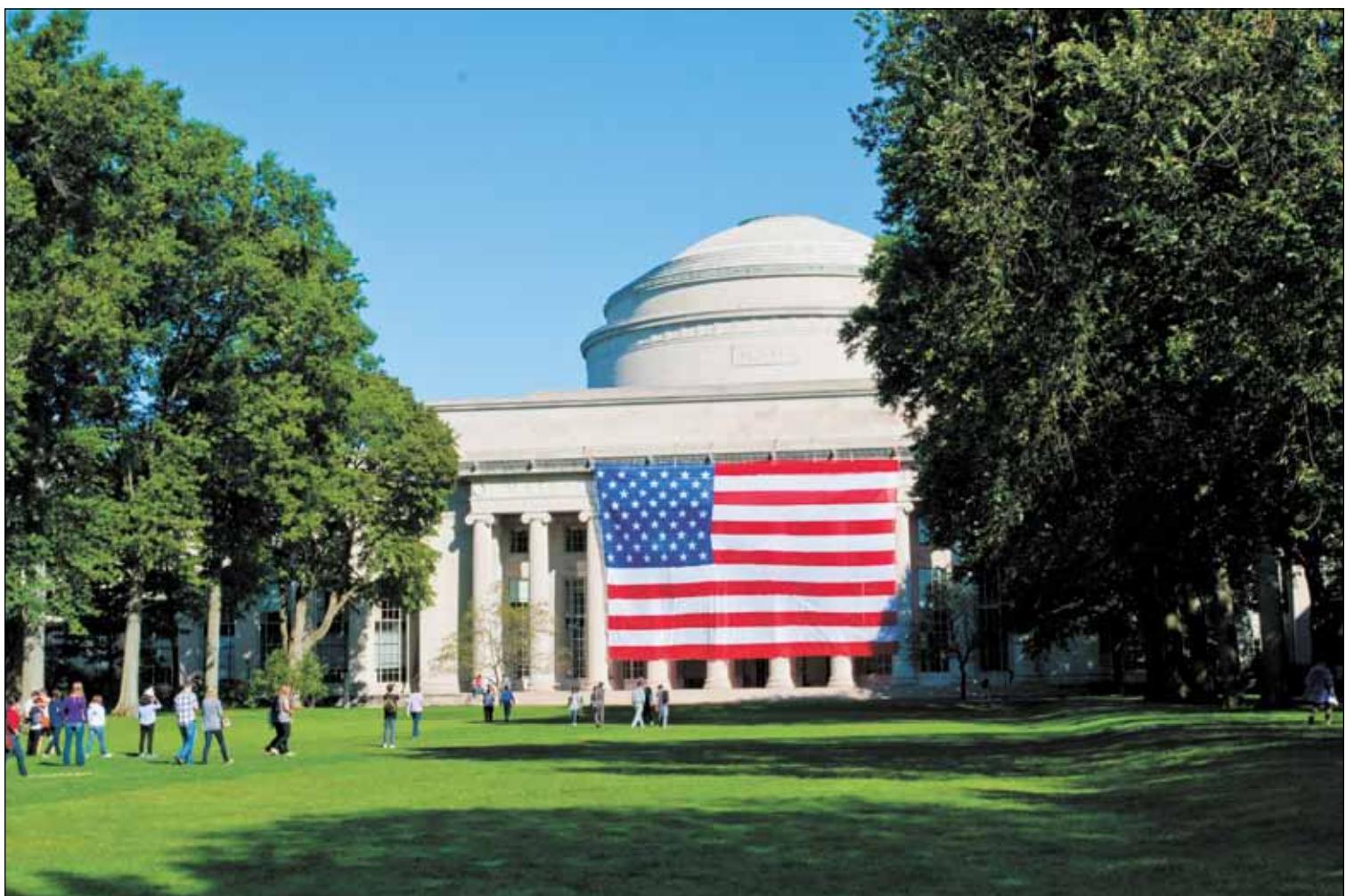
"They were ready to build anything," Fernandez said of Facilities.

The "Reflecting Wall," as it was called, stood along the brick wall near the MIT chapel for a year. On

the one-year anniversary of the attacks, Fernandez was out of the country, missing the veiling, and retirement, of the wall.

But he was okay with that. "The most solace I gathered from the

9/11, Page 20



ANDREA FABRE

Members of the MIT community pause to take pictures of the flag hung underneath the dome after the Sept. 11 reflection ceremony Sunday.

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Research focus changes as result of 9/11 attacks

Fernandez became heavily involved in improving skyscraper architecture and safety

9/11, from Page 19

whole experience in being involved in putting up the memorial was that it was not about the author and not about any single voice," Fernandez said. "I never really had a feeling of authorship, really."

The architect said he purposefully did not get involved in further memorials for 9/11. "I feel too close. It was a really hard day. For my friends and my family, at least for a solid year if not two years afterwards, you felt as if that was not anywhere below the surface. It was right there on top of everything. It was a part of people's daily life."

His contribution became his own coping mechanism: "I derived a lot of personal solace, and that was enough."

In true MIT fashion, Fernandez became heavily involved in research related to the twin towers' fall. His work followed advanced egress systems, studying how evacuation routes could be improved in developing skyscrapers. The original towers' stairwells were almost entirely made out of steel with a core of regular sheet rock. Only two people could fit abreast on each step.

"In fires, that's really not a good approach," Fernandez explained. Extra wide stairs and a completely concrete core, for example, would make tall buildings safer.

Baker Housemaster Guillermo Trott, also an architect, always admired the twin towers' design since he first saw them when he was a grad student. It was 1978, and the young architect took a picture of the towering marvels. The rails were like train tracks running right

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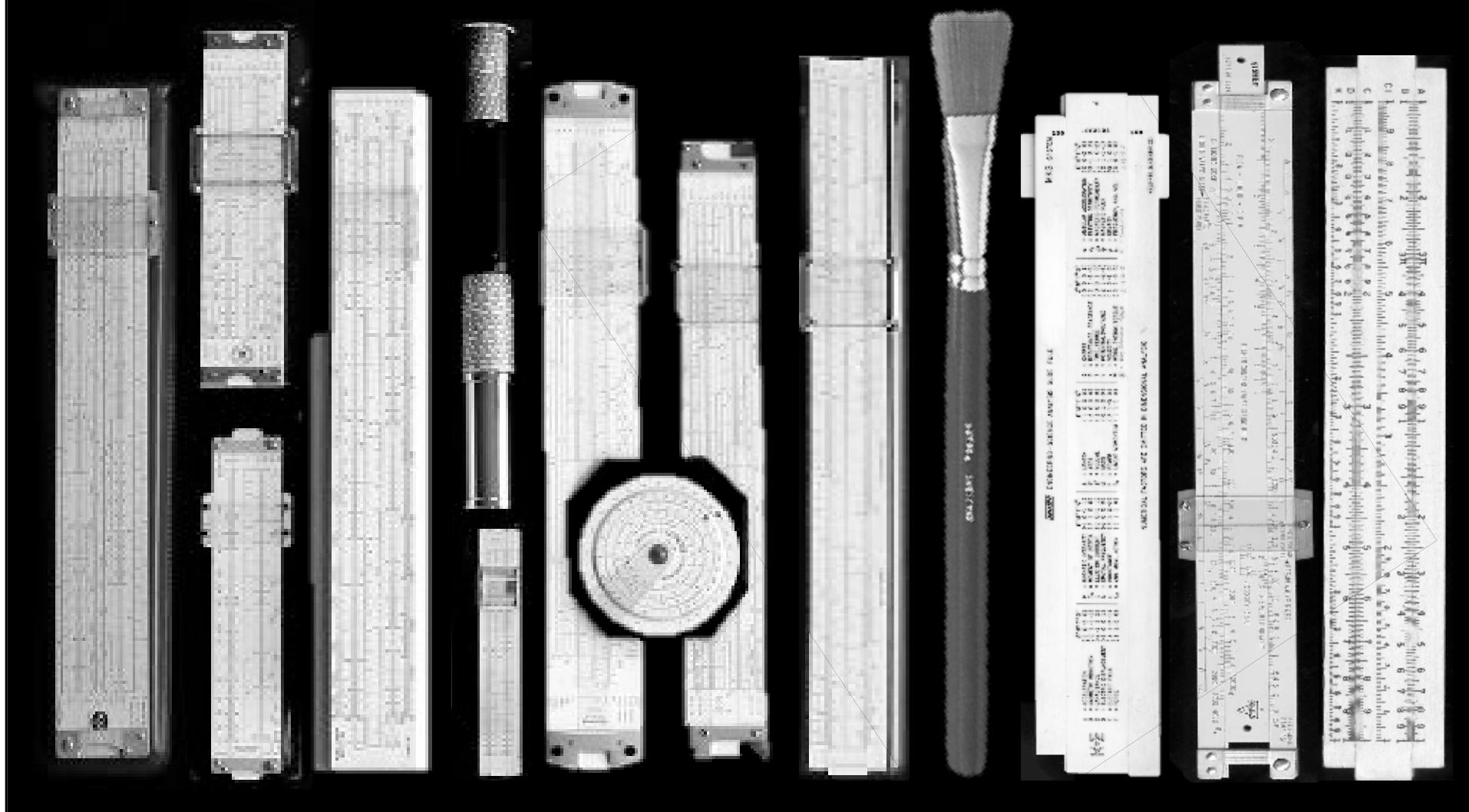
ANDREA FABRE

Attendees at the 9/11 ceremony on Sunday listen to President Susan J. Hockfield's remarks in Lobby 10. According to Hockfield, the ceremony was convened to "honor those who lost their lives and those who gave their lives on Sept. 11, 2001."

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up the building, he said, and the steel separated with great design. The picture, which Trott still has, also captured a plane with a white trail in the distance, looking as if it is flying right at the tower, only about 30,000 feet away. It is a beautiful shot, he says, albeit its significance was changed forever by a single day in history.

"Unfathomable." That's how Trott's wife, fellow housemaster, and course XVI Professor Dava Newman would describe 9/11 in one word.

The Head of Boston FBI came to Newman's office later in the fall semester to check on a graduate student of hers. He was Lebanese and received C-plane training in the US, and so was considered a threat.

"I was glad to talk to them," she said, adding that she wanted to dispel any suspicions regarding this "upstanding, wonderful student." Despite the fact that a C-plane is one of the slowest, least stealthy aircraft possible, his pilot training apparently made him suspicious. "This is like a summer hobby," Dava explained. "They couldn't be further from the truth."

The first time Newman saw Ground Zero after the attacks, she was on a Swedish Airlines flight from New York to Stockholm. "The pilot did the right thing to do," she said. He announced to the cabin that they were flying near the twin towers' neighborhood, and asked the cabin to take a moment of silence. "Everyone there took a moment of prayer and reflection."

Moments like these, both those immediately after the attacks and later on in life, are crystal clear to Newman. "Those memories, boy, they just stay in your mind."

Daniel Lewin

By the end of the day on September 11, 2001, Daniel M. Lewin SM '98 was identified as one of the day's victims.

Seated within a few rows of Lewin on American Airlines Flight 11 were the hijackers, including Mohammed Atta, the man who flew the plane into the north tower. Lewin is reported to have been killed while the terrorists made their way to the cockpit, making him one of the first of more than 2,700 victims on that day.

Lewin, co-founder of the successful internet company Akamai Technologies, was also a soldier, student, scientist, business visionary, husband, and father. In 1998, he received the Morris Joseph Lewin Award for Best Masterworks Thesis Presentation at MIT; many of the algorithms from his master's are still used by Akamai today. At the time of his death, Lewin was a PhD candidate in the Algorithms group at MIT's Laboratory for Computer Science.

In October 2002, the square at the intersection of Main and Vassar Streets was dedicated as "Danny Lewin Square" by Cambridge Mayor Michael Sullivan. Today, the black sign for Danny Lewin Square still stands in the shadows of the Brain and Cognitive Sciences building.

At Sunday's memorial, the names of 14 members of the MIT community who died on September 11, including Lewin, were read by Graduate Student Council Vice President Ellan F. Spero G after a moment of silence at 8:46.

"This event will stay with you forever, and because of this, it is worth reflecting on how you remember those events, and especially how you use them to shape your attitudes today and in the future," Grimson said.

As the ceremony concluded with the flag flying at half-mast, the attendees dispersed as silently as they had assembled, carrying with them the stories and memories that defined their personal experience of 9/11. The tragedy rewrote history, but it was one that we faced as a community. These stories are our way to teach America's future generations.



HENRY HILTON—TECH FILE PHOTO

Shortly after 9/11, MIT dedicated the "Reflecting Wall," representing a piece of the WTC exterior. Community members left flowers and prayers, as seen in this Sept. 18, 2001 file photo.



MAGGIE LLOYD—THE TECH

Sergeant Cheryl Vossmer holds a cross made out of the steel from Ground Zero. The cross was a gift from the firefighters in New York as a thank you for bringing volunteers and donating supplies to the site.

The MIT Family is known to have lost 14 members on September 11, 2001

David Morrison Berray, SM '00, Millbrook, NY

John R. Fisher, Beachwood, NJ (father of Kyle Fisher '13)

Kristin Gould, New York, NY (wife of alumnus James P. Gould '46)

Linda Gronlund, Greenwood Lake, NY

Charles E. Jones, SM '80, Bedford, MA

Frederick Kuo Jr., SM '70, Great Neck, NY

Judith Camilla Larocque, Framingham, MA (former speaker of the MIT Enterprise Forum)

Daniel M. Lewin, SM '98, Brookline, MA

Michael B. Packer, SM '78 and PHD '80, New York, NY

Donald A. Peterson '57, Spring Lake, NJ

Jean H. Peterson, Spring Lake, NJ (wife of alumnus Donald A. Peterson '57)

Heather Smith, Boston, MA (fiancée of alumnus Michael T. Jammen '97)

Thomas F. Theurkauf '79, Stamford, CT

John J. Wenckus '77, Torrance, CA

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Massachusetts Institute of Technology

Tennis sweeps opener

MIT women easily beat Smith College, 9-0

By Michelle Dutt
TEAM REPRESENTATIVE

The MIT Women's Varsity Tennis team swept in their first meet of the fall season with a 9-0 official score against Smith College. In doubles, returning athletes Lauren C. Quisenberry '14 and Stacey Vishnevetsky '12 were off the court first with a speedy 8-1 victory at first doubles. Soon to follow were Julia C. Hsu '14 and, in her first varsity match, Michelle M. Dutt '15 with another 8-1 win at second doubles. No doubles players fell to Smith as third doubles team Vynnie J. Kong '15 and Juana Becerra '15 won 8-4. In unofficial doubles play, Engineers Alexandria C. Hall '12 and Hillary E. Jenny '12, as well as and Caitlin R. Pomeroy '13 and Maddie B. Aby '15, experienced victories of their own.

In singles, Quisenberry defeated her opponent at first singles in record time, dropping only one game in the second



set. Michelle M. Dutt '15 was soon to follow with a second singles victory of 6-1, 6-0. The team acquired their next two victories due to the efforts of Hsu at fourth singles (6-1, 6-0) and Kong at fifth singles

The team is looking forward to maintaining its strong start next Saturday against Clark.

(6-2, 6-0). The mental toughness of athletes Vishnevetsky (third singles) and Becerra (sixth singles) showed as they pulled through close matches with 6-3, 6-3 and 6-1, 3-6, 10-1 victories, respectively. At seventh singles Hall won 6-2, 6-2; at eighth singles Jenny won 6-2, 6-1; at ninth singles Pomeroy fell to her opponent 6-3, 6-3; and Aby had a tough 6-2, 6-2 loss at tenth singles. The team is looking forward to maintaining its strong start to the season next Saturday against Clark University.

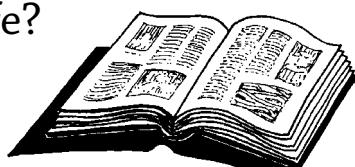
UPCOMING HOME EVENTS

Wednesday, September 14

Field Hockey vs. Gordon College

6 p.m., Jack Barry Field

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SPORTS SHORTS

Football beats Becker College in opener

MIT football kicked off its 2011 season with a 35-13 win against Becker College, its second straight season-opening win. The 35 points MIT put on the scoreboard was the most since its 48-15 win against Western New England in 2008. John C. Wenzel '14 passed for 224 yards, and Justin R. Wallace '15 started his collegiate career with an impressive 170 rushing yards; the young duo created a foundation for a strong, balanced attack. Offense wasn't the only outstanding aspect MIT displayed during the game.



The Engineers shut out Becker for the first three quarters, only allowing 74 rushing yards.

Becker scored their only points during the last six minutes of the game. Wenzel and Wallace, along with Alexander E. Chumbley '15, Benjamin D. Hessel '14, and Justin A. Kresz '12 — the latter showing his senior prowess with 104 receiving yards — each scored a touchdown for the team. Kicker Harry A. Rein '15 started his collegiate career perfectly, hitting all five of his point-after attempts.

—Shri R. Ganeshram

Field Hockey suffers first loss of season

The Field Hockey team fell to Johns Hopkins at home on Sunday, 3-1, for their first loss of the season. The loss was the first of the season of the Engineers, who had outscored their opponents 36-4 in their previous five games.

The Engineers opened the scoring in the 35th minute on a goal by Anna H. Teruya '12, assisted by Molly K. Duffy '14. This would be the only goal in the first half, despite the 23 total shots taken by the two teams. It would also



be the only goal for the Engineers in the game, however, as Johns Hopkins scored three times within a period of just over three minutes in the second half.

MIT outshot their opponents 21-19, and took 15 penalty corners to Johns Hopkins' 9. Kameron L. Klauber '12 led the team with nine shots, and Teruya had five.

The team will look to rebound from the loss on Wednesday, when they host Gordon College.

—David Zhu, Sports Editor

Overview of this year's Patriots

New players try to replace roles of departed veterans

By Nidharshan Anandasivam
SPORTS STAFF

After being knocked out in the first round of the playoffs the last two seasons, the Patriots hope to return to their championship-winning mode that fans have become

The Patriots hope to return to their championship-winning mode.

familiar with over the last several years. Although many of the former Patriot stars who were a vital part of their championship teams are now either retired or on other teams — defensive backs Ty Law and Asante Samuel, safety Rodney Harrison, linebackers Tedy Bruschi and Mike Vrabel, running back Corey Dillon, and wide receiver Troy Brown — the Patriots still show promise for this upcoming season.

Randy Moss may be gone, but

Chad Ochocinco is here. This year the Patriots should have a spectacular receiving corps with the addition of wide receiver Ochocinco, who accepted a three-year contract during the offseason. With a combined 29 years of NFL experience among talented receivers Deion Branch, Wes Welker, and Chad Ochocinco, Tom Brady should not have too much trouble finding someone to pass to. As long as Brady stays free of injuries and the offensive line offers decent pass protection, the Patriots' passing game will be extremely lethal. This promise — combined with a respectable running game centered on the improving running backs BenJarvus Green-Ellis and Danny Woodhead — is a recipe for offensive success.

On the defensive side, the Patriots are going to have to step it up — especially after the loss of 2010 Pro Bowl defensive back Brandon Meriweather. The acquisition of defensive tackle Albert Haynesworth from the Washington Redskins should improve the pass

rush remarkably. Lining up next to Haynesworth will be Vince Wilfork, who averaged close to two sacks per game in 2010. This dynamic duo will hurry opposing quarterbacks and put the Patriots' secondary in a better position to make some game-changing interceptions.

On the defensive side, the Patriots are going to have to step it up.

The Patriots finished with a strong 14-2 record last season but ended their playoff run immediately when they fell to the Jets at Gillette Stadium in the divisional playoffs. With a new season comes new hope and excitement. Patriots fans across the nation are ecstatic, and they have reason to be — not only because there is an NFL season despite the threat of lockout, but also because of the winning potential of their team.

